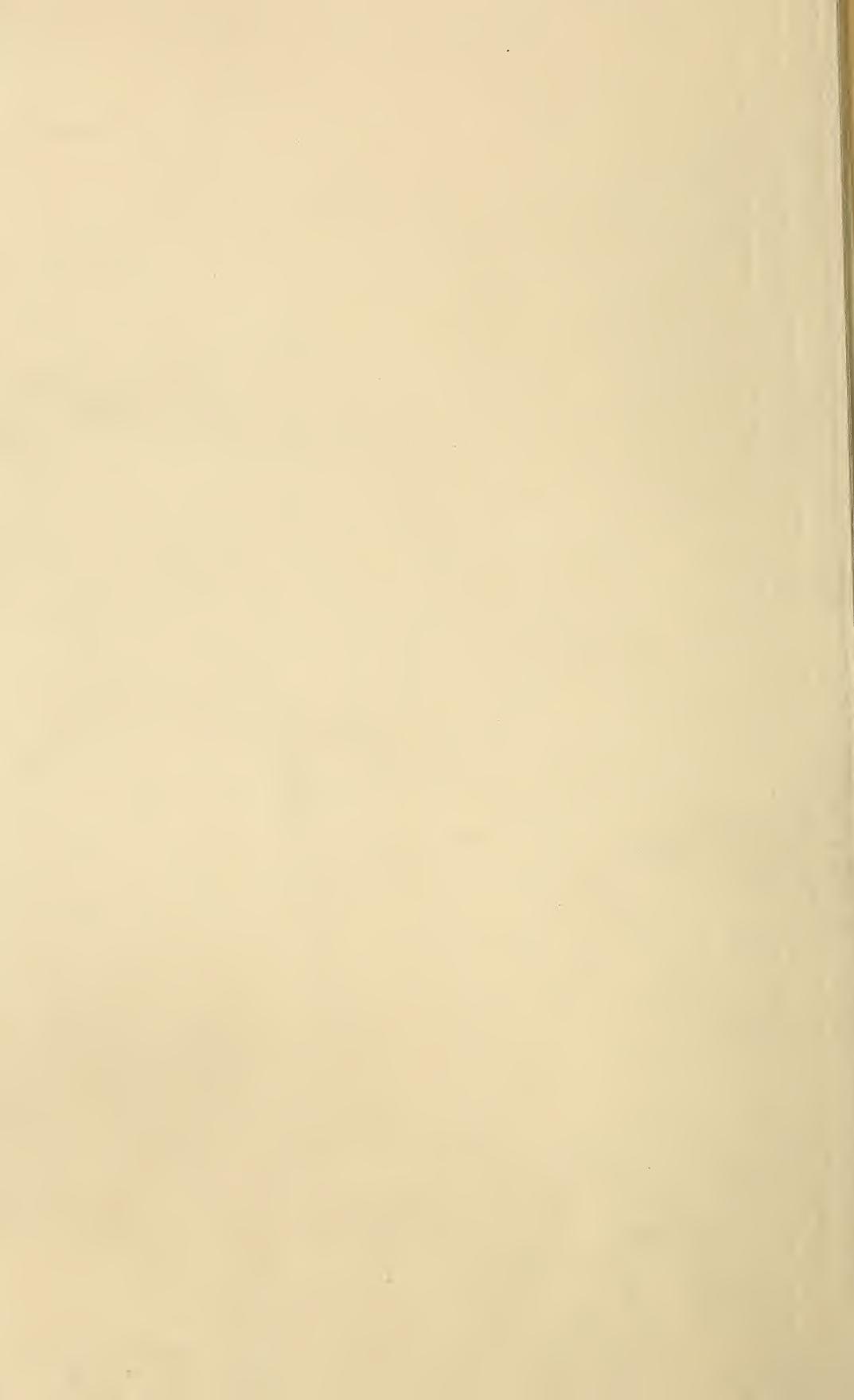


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GLEANINGS IN BEE CULTURE

A JOURNAL
DEVOTED
TO BEES,
AND HONEY,
AND HOME
INTERESTS.

ILLUSTRATED
SEMI-MONTHLY

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NO. 15



THIS YEAR nearly all my hives (eight-frame) have brood in the outside combs, probably because so little honey was coming in.

A QUEEN is said to be a perfect female, and a worker an undeveloped female. Is that fair to the worker, for parts fully developed in her are left undeveloped in the queen? Each is perfect in its place.

POSSIBLY beginners might overdo top ventilation; but I feel safe in saying that, whenever a colony is strong enough to occupy with brood a second story, it's well to have an entrance to each story.

DID YOU EVER THINK how rapidly a young bee grows? Dr. Donhoff found that a queen larva increased in weight 1500 times in 5 days. According to that, a baby weighing 10 lbs. at birth would weigh $7\frac{1}{2}$ tons when 5 days old.

THAT WAS CARELESSNESS inexcusable in me not to give the author of that quotation on page 537 about the queen laying in center of brood-nest where the eggs should be. Turn to GLEANINGS, page 513, 2d column, 3d paragraph, and you'll find it was said by G. M. Doolittle.

ALTHOUGH the bees get no nectar from white clover this year to speak of, there seems to be rather more than the usual amount of white-clover pollen stored. Is this the general rule in seasons when white clover yields no honey? [No one has reported white-clover pollen, although some is being brought in here.—ED.]

WHEN MOVING BEES, Editor Hill says always have with you some cotton batting to promptly plug any leak that springs. That's good; and the same batting will be good to caulk old hives before starting. I used putty last spring, but will never do it again—too much trouble afterward. [This is a kink worth knowing. Paste it in your hat.—ED.]

A PROFUSION of white-clover bloom is almost tantalizing when, as this year, the bees seem to get no nectar from it. [Yes, there

are fields and fields of white clover; and why under the sun they won't yield is the biggest conundrum among bee-keepers this season.—ED.]

AMONG OTHER SUGGESTIONS for the protection of useful birds given in *L'Apiculteur*, is that of the propagation, in primary schools, of instruction as to the general utility of birds. If all teachers in public schools take pains to thoroughly impress the boys that birds should be protected, and not destroyed, protective laws will hardly be needed.

WHEN MR. COWAN was here I mentioned, as one of my own inventions, fastening queen-cells on combs with wire nails. He asked me if I hadn't seen that in his book. I told him I had read his book, and it wasn't there. He turned to the page and showed it, and pulled out of his vest a pin such as he used for the purpose. But I insist that any Johnny Bull might think of a pin; but a nail! there's originality, there's genius for you!

THAT PARAGRAPH from C. P. Gillette, page 551, is interesting as helping to an understanding; but the next investigation might show very different results. Loads of honey, also of pollen, vary greatly. [In the pamphlet from which we made the quotation it is shown that Mr. Gillette made a large number of measurements, and from these he struck general averages; and as these averages agree with other averages given in former times, I think they must be very nearly correct.—ED.]

JUNE 22 I put the queens of six colonies in lower stories, leaving nearly all the brood in the upper stories, an excluder between. Eight days later I found in two cases three queen-cell cups containing eggs in the upper story. Had the bees kept those eggs eight days without hatching? had the bees carried the eggs up from the lower story? had the queen gone up through the excluder, laying only those three eggs, and then crawled back? did workers lay the eggs? or how do you explain the case? [I give it up.—ED.]

YOU WANT TO KNOW, Mr. Editor, page 550, how R. Wilkin knew it was royal jelly in worker cells. Because the larvae were $1\frac{1}{2}$ days old; and hasn't Dr. A. de Planta told us that for the first three days, the food of worker larvae is chemically the same as that fed to

royal larvæ during the entire five days? In other words, all worker larvæ have royal jelly for three days. I've often seen an extra amount in worker-cells when larvæ were scarce, but never saw a cell half filled. Cowan thinks with Wilkin that laying workers may thus originate. [I do not see yet how R. Wilkin knew that the substance in the cells was royal jelly or common larval food. Granting that they are one and the same thing for the first three days, I would assume that it is nothing more nor less than the milk with a common worker grub.—ED.]

REIDENBACH fed to bees diluted honey colored deep red, killing the bees as soon as they had taken a little. In most cases he found not a trace of the colored honey in the honey-sac, but in the chyle-stomach beyond, just as if we should swallow directly into the intestines without having any thing get into the stomach. His experiment proves that field-bees first supply their own wants, then fill the rest in the honey-sac. [My observation is almost directly the opposite of this. A number of years ago the bees were gathering the juices from overripe raspberries on the bushes. As these were the Cuthbert red, the juice was of a pink color. I killed scores of bees just as they came from the berries, and in every instance I found the honey-sac filled with this pink juice. There is a little trick in pulling the bee apart without mutilating the honey-sac. Grab the bee by the thorax, then by the abdomen; give it a quick jerk, and the honey-sac will be left clinging to the thorax, in nine cases out of ten. I did not examine the chyle-stomach, but I do know that the honey-sacs were clear full, as the bees could hardly fly. It is reasonable enough to suppose, however, that the field-bees would first supply their own wants.—ED.]

YOU THINK, Mr. Editor, that color has nothing to do with stirring up the fighting qualities of bees, p. 538. I don't think, but I know that it has much to do with it "in this locality." If bees are cross enough they'll sting through white clothing; but they'll sting black when they'll not think of touching white, and hundreds of times I've seen them keep up an attack on the head of a black hat-pin in a white hat. A black hat-band is much the same. [I can readily see how mad bees might pay particular attention to a hat-pin head. I have noticed that, when angry, they will make a dart for one's eyes, for they seem to know as well as we that this is the tenderest part of our anatomy. Well, when they see the glistening knob of a hat-pin they will make a dive for that because of its resemblance to an eye. As I wear glasses constantly, about two-thirds of the bees make a strike for the glistening lens; and about the next minute they try some portion of my beard, and there I smash them. If they do not strike for my eyes they will go for my mouth. A smart rub at just that moment "fixes" them also.

I have worn hats of different colors among the bees, and I have never yet noticed that they pay particular attention to the black; but

possibly, doctor, your bees may be crosser than ours. Will those who have hybrids or cross bees please report on this point? If it is a fact that black is obnoxious to them, then the sooner we settle it the better.—ED.]

REPLYING to your footnote, page 538, Mr. Editor, the only thing I happen to have at hand about length of bees' tongues is a quotation in *Australian Bee Bulletin* from Mr. Rankin, of the Michigan Experiment Apiary. He says the average lengths of tongues in that vicinity are: Black, 4.2 millimeters; hybrid, 4.9 mm.; Italian, 5.3 mm.; bumblebee, 8.3 mm. "We made one direct cross, or an in-cross of one colony, and the bees from this cross have a tongue 5.5 mm., an increase of 1 mm. over the parent colony." Ask D. N. Ritchey for interesting facts. [How would it do if the enterprising queen-breeders of the country, instead of advertising five-banded or golden-yellow bees, would advertise those with long tongues? The golden-yellow craze never gave any better working bees; but a craze for bees with long tongues, or bees that stand wintering well, would give us something of value. If there is a marked difference, and no mistake, in the length of bees' tongues, then by all means let us give prominence to it. The glossometer—there's the rub. How would this do for a makeshift? Cut a piece of wire cloth, and so arrange it that it can be raised to various heights from a sheet of glass having upon its surface a thin film of honey. Now, then, to determine the length of the bees' tongues, confine bees to the wire cloth. After they are feeding, raise the cloth to a point where they can just reach it and no more. Now with a micrometer measure the distance between the wire cloth and the glass. Of course, it will be necessary to have the wire cloth of uniform surface or the measurement would be inaccurate.—ED.]



FOUNDATION NOT ALWAYS PROFITABLE.

Its Use a Convenience rather than a Profit; Deep-Cell-Foundation Experiments.

BY R. C. AIKIN.

The question of the use of foundation is one that is vitally connected with that of wax secretion. In the second and third Musings preceding this one, wax secretion was touched upon to some extent. Just now, since the new product, deep-cell or "drawn foundation," is on trial, much interest is manifested in the foundation question, and possibly no better

time could be taken to offer results of experiments and some opinions on the matter.

Ever since the general introduction of foundation I have had more or less to do with it. At first there was a decided opposition to its use, both on the ground of the suspicion it would create, even though used in brood-chambers only, and because of the "fishbone," or tough bases, where used in section honey. I entertained grave doubts about the advisability of using it in sections, and it was a good many years before I could make up my mind that I wanted to so use it, preferring to stick to the old method of using natural-comb starters.

During the past eight years I have used many hundred pounds, principally of the Dadant make, and have made nearly a ton myself. I have used it in very narrow starters and in full sheets; have had many brood-combs built on it. I have used the Van Deusen flat-bottomed to some extent, and have, the past season, tried the new product known as "drawn foundation," using ten pieces in which the cells were about $\frac{1}{4}$ inch deep. I am now going to give as fair and candid an opinion as possible upon this subject. I would say, right here, that the chapter on "Use and Abuse of Foundation," in Mr. Hutchinson's book, "Advanced Bee Culture," is about as near the truth as any thing I have ever seen written on the subject.

Many years ago I made an observation hive which would take one to three L. frames. The first real study of foundation I ever made was when I put a sheet of it into that hive and watched it develop into comb. Foundation accomplishes two things in a very satisfactory manner when carefully used; viz., all worker and straight combs. It is a very convenient article for use in sections, so handy to put in for starters. I suspect that its convenience as a starter material will go further toward maintaining its free use in the years to come than will its value as a money saver or maker. I feel constrained to take a middle ground on this question.

From my own experience and study of the matter, together with all I have read on the subject, which has been much, leads me to believe that, in the great majority of cases where foundation is used, it is thinned more or less by the bees. The amount of thinning depends very much upon conditions. The temperature, needs of comb at the time, whether urgent or not, the amount of wax being secreted, and perhaps other minor points, all have to do with the matter. I hold to the opinion that wax is secreted more or less freely at all times during a honey-flow, the quantity varying as influenced by the prospect of its need, the presence of bees of proper age, and the state of the flow of nectar.

While there seems to be but little doubt that foundation is, in the great majority of cases, thinned more or less, it remains, I think, almost an undisputed fact that comb built upon it is not by any means equal to natural comb for tenderness and fine edible qualities. I refer strictly to the quality of the comb. It is self-evident that the very quality that makes

it less edible is an improvement on its shipping quality. The product is less edible only in the matter of a somewhat increased toughness and amount of wax, the taste in no way being impaired.

If it is true that wax is usually secreted in sufficient quantities to hold the honey gathered—a belief I hold to—the use of full sheets in sections can not pay, viewed from the point of the saving of honey-consumption in wax-secretion. Neither can great stress be laid upon the thought of retaining bees to build comb that otherwise would field, unless we give up the generally accepted teaching that those under field age are the wax-workers. It seems that the economy of nature is such that provision has been made for all these things. The influences that bring on the honey-yielding plants also bring on the colony of bees; so that, when the flow arrives, there are in the colonies those suited to the various duties to be performed; and I sometimes wonder if we do not cease to be economical in too far departing from the natural.

As hereinbefore intimated, foundation is a very handy article; and if starters can be produced and used in this way cheaper than by natural comb, that will cause it to be used. Bees can start their own comb as well as we; but to induce the building in the place and manner that serves our purpose to the best advantage is another matter. A starter—a very narrow strip of foundation, or bit of natural comb—serves the purpose of guiding the bee; and if the use of such gives as perfect a comb as do full sheets of foundation, we come right back to the question of wax-secretion.

It is claimed that the full sheet brings a better finish; but if so, it is only a minor point among many. I shall send to the Root Co. sections built out from brood foundation, from extra thin, from half-sheets, from very narrow starters, "drawn foundation," and natural comb, all in one super, and I doubt if expert judges can tell which is which by the finish. I have believed for years, and practiced accordingly, that the strongest point in favor of full sheets in sections was the extent to which they act as bait-combs. They do have some inducement in this way. We know that a colony can build a lot of comb in a very little time when it is needed; but to determine just whether foundation is a help in any great degree is a problem very difficult to determine. There has been a great amount of haphazard guessing done; but thorough practical tests are as "scarce as hens' teeth."

To take into consideration all fields and conditions, I do not think a wholesale use of foundation in sections is profitable. Starters or guides we must have from some source; and a bit at the top, and a like one at the bottom, serve the purpose. Some place much stress on the use of full sheets to avoid the building of drone comb, because worker is thought to be prettier. Years ago I admired a finished section of drone comb above that of worker-cells, and 'tis a fact that I did not know the worker comb was more beautiful until somebody told me so—don't even yet know it.

Now, when it comes to eating honey I will take natural comb before that on foundation, and the clear honey without *any* wax before either of the others. More than this, I find a whole lot of customers whose likes in the matter are just like mine, as to taking it with or without the wax; they are not versed on the foundation question.

As to the "drawn foundation," my own experience with last summer's limited test shows it to be no more objectionable than the old-style foundation. It "tasted" no more waxy. It looked just as nice. The bees took kindly to it, putting honey in it within 24 hours after putting it on the hive. I did not watch to see if it was sealed first, but know it was not the last to be sealed. Evidently my bees used it just as they would a piece of natural comb equally developed. The flow was quite moderate, comb-building a little tedious, weather rather hot, and general conditions favorable to excellent super work had the flow been more free.

I have seen one sample of the "drawn foundation" from another part of the State where the yield was better than mine. I do not know the conditions at the time it was put on; but there was a lot of extra wax plastered on for some reason. The honey was removed from the comb, and cells broken off to the foundation. The party who tried it was disgusted with it.

Super 3 was on a strong colony that was doing good work. The finish was good, considering the very moderate flow in which it was worked. This super I have sent to The A. I. Root Company just as it left the hive, together with samples of the sections from the other two supers. Notice that there were three supers on three colonies of different strength, but all worked at the same time.

Here are the numbers of the sections, and what they contained when put on the hives; and by referring to the maps you can see the position occupied. All starters less than full sheets were put in so that the short way was up and down, the most of them running clear across the top of the section. No. 1, starter of Weed extra thin, $1\frac{1}{2} \times 2$; 2, Weed thin, $1\frac{1}{2} \times 2$; 3, Weed light brood, 2×2 ; 4, Weed medium brood, 2×2 ; 5, 6, 7, 8, full sheets of "drawn foundation" (the new deep-cell product); 9 to 32, my own make of extra-thin foundation, $3\frac{1}{2}$ long by 2 inches deep.

Super 2. Numbers 37, 43, and 49, full sheets of "drawn foundation"; 46 and 52, full sheets of heavy brood. All other numbers in this super, half-sheets of extra thin.

Super 3. Numbers 54, 55, 56, 58, 59, 60, 61, 70, 74, 75, 76, 77, 80, and 81, half-depth sheets, extra thin, with bottom starters; 57, 64, and 78, "drawn foundation"; 63, 66, 67, 73, very narrow top and bottom starters; 72 and 79, full sheets of heavy brood foundation; 69, drone comb starters, top and bottom. This is the super I have sent to Root just as it left the hive; and if he thoroughly examines it he can tell you how the different grades compare as worked in it.

Loveland, Colo.

[I will explain to our readers that this is the

last of a number of articles written by R. C. Aikin last winter; but on account of its being at the tail end of the series it is a little belated.

I have spent half a day in looking over the honey; but, unfortunately, the maps and figures do not seem to tally in case of the drawn foundation, and I was therefore able to prove nothing; but as we know that the flat-base drawn foundation of last season, which friend Aikin is writing about, had thickened bases in some instances, at least, we will assume that at least a part of what he refers to came under the same objection. Drawn foundation with deep walls and *flat* bases is a thing of the past. Mr. Weed can now make in its stead drawn foundation with walls $\frac{1}{8}$ inch deep, and natural bases, which, as I have said before, seems to eliminate the objection of "gob," or thick midrib.

Super No. 3 contained, according to the last paragraph of friend Aikin's article, a series of sections containing half-depth sheets with bottom starters; also another series with narrow starters top and bottom. In the earlier part of the article Mr. A. thinks no one could tell the difference. As he sent the crate on to us just as it came from the hive, and as the sections stuck considerably in pulling them out, I concluded he had not previously examined it. I found that all of the sections where the greatest amount of foundation was used looked more even than the rest. There were two or three sections of the other lot (mere starters top and bottom) that looked about as well; but there were also some among them that had almost entirely *drone* comb; and speaking of such I can not see how any one can think it looks as neat and pretty as sections all of worker. To me it has a coarse, rough appearance. I have asked several in our office, without first giving them my preference, and they seem to be of the same opinion. I do not mean to say that nice combs can not be secured with starters only at top and bottom; but drone comb is quite liable to be built. Some little time ago, by means of plaster casts I showed that *natural-built drone comb* is more gobby by considerable than worker comb off from ordinary thin foundation. I do not, therefore, see that friend Aikin would eliminate the trouble of thick midrib by using a scant amount of foundation. If the bees would always build *worker* comb, as they will do a good many times, then I grant that the difference will be in favor of the scant use of foundation.

There is one point that has, perhaps, never been thought of sufficiently. Mr. Danzenbaker is very particular, Mr. Weed says, to have full sheets of foundation, and those sheets must reach clear out to the sides—that is, come actually in contact with the wood. If it reaches to within only $\frac{1}{8}$ inch, the bees will be pretty sure to make bee-spaces, or pop-holes. This is one secret of his getting such beautiful honey, Mr. Weed believes.

A good many other bee-keepers use full sheets, but there is almost a bee-space around the side and edges; and this, according to Mr. Weed, does not give the perfect slab of honey, which we so much admire.—ED.]

RAMBLE NO. 149.

A Visit with Judge Levering.

BY RAMBLER.

Judge Noah Levering is another bee-keeper who gave me a welcome to Southern California and to Los Angeles. He is one of the veterans of the industry, and came to California about twenty-three years ago. Judge Levering was born in Ohio, and has lived in various portions of the West. He prepared himself for law practice in the office of Leonard Swett, who was afterward Lincoln's law partner. Mr. L. was well acquainted with the latter, and has many anecdotes and episodes to relate about the martyred president.

Mr. Levering practiced law in Sioux City, and was there elected County Judge; and while residing there he held several offices. He became interested in bee culture while living in Sioux City. His office work was so confining that he turned his attention to the bee-hive more as a recreation than for profit. His attention was called to the industry from reading an essay by Mrs. Tupper in the Patent Office report. He noted in said article a statement about the bar hive of Germany; and the idea came to him that, if they would build a comb to a bar, they ought to build it to a bar all the way round or to a square frame. At this time he had never heard of a movable-frame hive, and was quite elated over his invention, and proceeded to show his plans to the land agent. This gentleman blasted his hopes of becoming the inventor of a movable-frame hive by showing him Langstroth's work and the description of his hive, which had been patented but a short time before. This interview resulted in an increase of bee-fever, and it was not long until he had a swarm of bees in a movable-frame hive; and the first new brood-frame full of white honey looked so charmingly beautiful that, like a dutiful husband, he carried it over to the house and showed it to his wife. Then he carried it around and exhibited it to all of the neighboring wives (of course it will be understood that these other wives belonged to other husbands). Through his enthusiasm he became quite a noted bee-keeper as well as County Judge. In course of time he retired from the bench and removed to Independence, Mo., and engaged in mercantile business. In 1875 he came to California and had charge of a large apiary belonging to Judge Ross and

others in Verdugo Canyon, a few miles from Los Angeles.

Mr. Levering has always been interested in the organization of historical societies. He was the leading spirit in such societies in Iowa and Missouri, and soon after arrival in California he was the first to organize the California Historical Society which is now a valuable factor in collecting data of historical events. He has also been a leading organizer of bee-keepers' associations in Los Angeles, both county and State, and has worked untiringly for the interests of bee-keepers in the unity of action in selling honey. He has been quite a prolific writer upon apicultural subjects, and was the first to start a bee-keeping department in one of the local papers, the *Herald*.

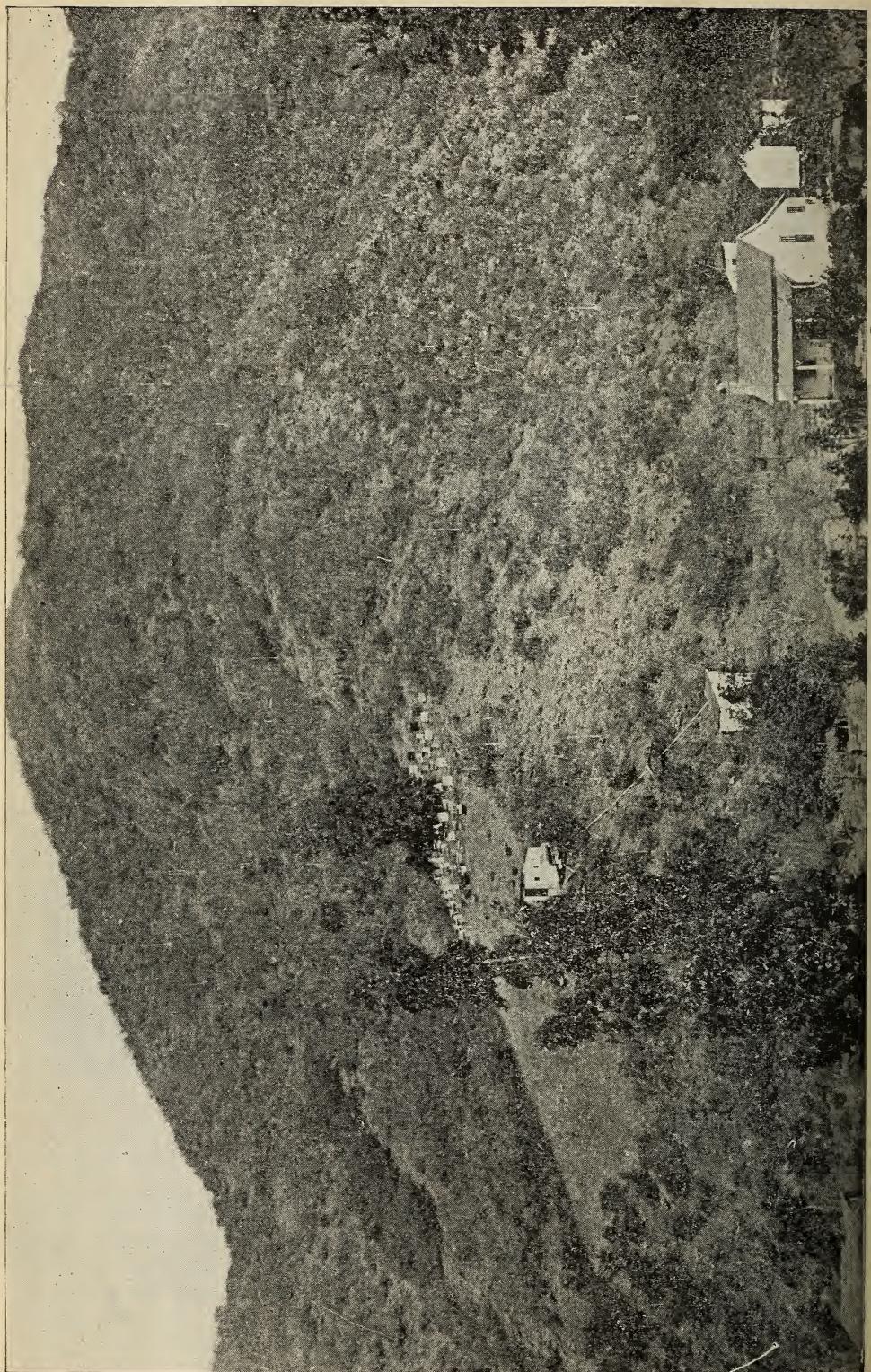


JUDGE NOAH LEVERING.

His later writings have been for the *California Cultivator*.

In connection with Mr. Pryal, of Oakland, he commenced the publication of the *California Apiculturist*, the first California bee-paper. Owing to various reasons the paper suspended publication after running about one year. Though this State has several thousand bee-keepers they did not then seem inclined to support such an enterprise any more than they do at present. There have been several papers devoted to the industry started since.

APIARY OF JUDGE NOAH LEVERING.



The *Pacific Bee Journal* has enjoyed the longest life, but even that has now succumbed to the inevitable that has befallen those before it. Mr. L. has aided nearly all of the papers, in hopes that there would come a time when the bee-keepers would support a paper devoted to their interests. But the time is not ripe for such a paper on the Pacific coast.

Mr. L. has owned bees for several years, and has had the usual ups and downs of a California bee-keeper. He boasts of some good seasons when he obtained large yields of honey. He also laments an extraordinary season when he lost about 120 colonies in a mountain fire. When he saw the destruction, the entire surface of the canyon blackened and charred, and the honey in pools beside the charred remains of the apiary, with but two hives left, and these burned in spots, he says he never had such an undefined, discouraged, and desolate feeling in his life. The apiary is located 12 miles west of the city, and in sight of the Pacific Ocean. Here he has a ranch of 140 acres, which has been paid for largely from the proceeds of the apiary. As will be seen from the half-tone, the apiary has a unique location. All of the work is calculated for a rapid transit down hill.

From the apiary to the extracting-house the grade is a little sharper than it appears in the half-tone. With a cart well loaded with frames of honey it would be necessary to have a brake on the cart; for, if it should once get the start of the operator, woe betide the sweetness that would go rattling down through the brush. From the extracting-house the pipe leads to the tank in the little house below. The honey gets right down there in haste. When the honey is drawn into cans the grade is still down into the wagon, and still down through the canyon to the county road. Lifting is reduced to a minimum, which is an excellent feature for any bee-keeper to imitate. The sun wax-extractor is attached to the side of the extracting-house, thereby making it a combination affair. I believe I suggested to Mr. L. the advisability of providing a chute for the wax, but he thought he was chute enough himself for that precious material.

Mr. L. has lost quite a number of colonies from time to time from starvation. His motto is that, if they have not honey enough to tide them through a poor season, then let them starve. He has fed bees until he is satisfied that it does not pay; but I am inclined to think that the most of the fraternity will not agree with him in that respect.

Mr. L. has something of a hobby in respect to hives. He uses a square hive with a frame 12x12 inches. He believes it is for the colony's greatest good to dwell in a hive in which they can cluster in the form of a ball, according to nature. A few of us, however, believe that a hive of a more elongated nature will answer just as well, especially in this climate. Mr. L.'s apiary neatly surrounds a gum-tree which sort o' anchors it to the hillside.

The apiary was moved to this elevated position from the fact that the canyon is narrow at this point, and the location they did occupy to the right of the house was too near the

highway, and they were liable to annoy the traveling public. To keep right with his neighbors, even if it is an inconvenience to himself, is a rule of the gentleman's life.

In 1880 Mr. Levering made a shipment of two colonies of Italian bees to Auckland, New Zealand, a sea-voyage of 7000 miles. Several parties had tried to accomplish this feat, but had failed, and this was the first successful long-distance shipment made to those distant islands. His hive was so constructed that it gave ample ventilation. Old and strong combs with natural stores were used, and a sponge was arranged where the bees could get at it, and directions were attached, requesting that water be given them at stated times.

Mr. Crayton, of the San Francisco *Post*, was interested in the success of the shipment; and the two colonies, when put aboard the vessel at that city, were placed in the captain's cabin, and he personally saw that the directions on the hive were fulfilled. The first shipment arrived with but few dead bees. Other orders quickly followed; and Mr. L., in 1880 and '81, made many shipments, all through the same steamer and captain, and not a colony was lost. The bees were ordered by an association that was organized in New Zealand for the purpose of introducing valuable plants, insects, and animals from other countries. Owing to their failures heretofore to import successfully the Italian bee they had made arrangements to send a man to Italy for that purpose, and had set apart \$2500 for expenses. The Australian papers, at that time, claimed that Mr. Levering was entitled to that money. It seems that others thought differently, for he never received it.

The successful shipment was quite an event for the New Zealand bee-keepers, and attracted much attention. Extended notices were published, not only in the New Zealand papers, but the Los Angeles papers also; and while this was quite an important affair there has never an account of it appeared in any of our eastern bee-papers, which matter will be set right, I trust, when this article appears.

During the past year Mr. Levering has come into possession of 200 colonies of bees through the death of a brother, in the extreme northern portion of the State. He is now in that locality, accompanied by the writer, who will, later on, give some experiences in the management of bees in Siskiyou County.

SMALL ENTRANCES DEFENDED.

Clustering Out Caused by Drones.

BY M. H. DUNN.

Editor Gleanings:—Permit me to say a few words in defense of small entrances vs. large ones. I have noticed in *GLEANINGS* of late considerable controversy on this line, the majority being for large entrances; and the only reason that I have discovered is to afford more air and to keep the bees from clustering outside of the hive. But to my mind, the large entrance, with the experience that I

have had, has been a failure. The way I prevent my bees from hanging outside the hive is this: I have seen the time when they did hang out in great bunches. I blocked up the hive, but they would still hang out, and my neighbors' bees did the same. I talked to my neighbors, and the consolation I got was that "they always do that in warm weather." Now, dear friends, that is not the trouble. I began to investigate. The first thought that came to me was that I had always noticed few if any drones hanging out, and that I had never seen bees hanging out around the entrance of trees in the woods, no matter how large the swarm or how small the entrance.

About 18 years ago, when I first commenced in the bee business, I used a brood-chamber with 1600 cubic inches, and entrance clear across the front of hive, $\frac{1}{2}$ inch deep, and a flat board for a cover, with no shade whatever; and the result was that a half or more of my bees were idle all through the honey season. To get the best results these bees had to be set to work. So I set to work to master the situation.

The reason for their hanging out was, in my opinion, the intense heat within; and in order to save the brood from suffocation they hustled out, and, consequently, became indolent. In the course of time this state of things changed with me, at least, and this is the way I did it:

I made my own hives, 2000 cubic inches for brood-chamber, with entrance in center of one end, 4 inches by $\frac{5}{8}$ deep, using double or two story high, and, when putting on the second story in the spring, I remove all drone comb, if any, out of the brood-chamber and never permit any drones to hatch unless from some choice stock. This is the first step toward disposing of the heat. I make my covers with $2\frac{1}{2}$ -inch cleats on top, and when the warm weather begins I have a shade or roof, as it were, made of four shakes, and face my hives to the east or southeast, lay the four shakes on top, and four more set up on the south side, about six or eight inches from the hive, and you have a complete shade and a free circulation of air all around the hive. Eight hundred shakes and four hundred lath will make shades for a hundred colonies. Lay down two lath two feet apart, then place eight shakes on top of those, and lay on two more lath, and nail all together; then saw the lath in two in the middle, and they are ready for use. I never allow the hot sun to strike my hive after 10 o'clock in the morning; and by a free use of the extractor, or for comb-honey tier-up, you will not only get the best results but will infuse new life into your bees, and they will just tumble over one another to get in and out. Since I came to California I have seen the thermometer register 130 for three or four days, and not a bee hanging on the outside of the hive, but all were hustling.

Now, brother bee-keepers, try it. The remedy is cheap. By keeping your drones down you save large quantities of honey, and avoid swarming to a certain extent.

Now begging your pardon, Mr. Editor, for a few more remarks, I will close. The bee-

keepers in California this season will have to feed or lose the most of their bees, as there has been only about three or four inches of rain in Southern California this winter, and the sage has not bloomed, and is making no growth, and the outlook is rather discouraging. Those who can get through with their bees will undoubtedly reap a rich reward next season. I have my bees here in the valley, and they are in fine condition. I have 101 colonies.

Fullerton, Cal., June 22.

[There is no question at all that, when hives are too small, the bees are more likely to cluster out. In our practice, a single brood-chamber of eight-frame capacity, L. size (nearly 2000 cubic inches), is not large enough. I can hardly believe that drones have very much to do with the matter, because I can not see any reason why they should. Ample shade is important — very important; and where there is no shade from trees or bushes, then some kind of shade-boards must of necessity be used. The fact that you run your hives of the capacity of 2000 cubic inches in *double* stories would in most cases — perhaps in all — prevent clustering out. Here is the secret of the non-clustering. I found this to be true last summer at our out-yard; but a double-story hive, with deep entrance, is, in my judgment, better.—ED.]

BEE-KEEPING IN "MERRIE ENGLAND."

Apiary of C. Atkinson.

We present a view of Mr. C. Atkinson's apiary at Tockwith, near York, with the owner seen in the background. Mr. Atkinson being a well-known Yorkshire bee-keeper and honey-producer on a comparatively large scale, we were desirous that readers should know a little as to himself and his apiaries, and consequently made bold to express this much in asking for a few particulars. In response, Mr. Atkinson kindly wrote as follows:

"Yes, I have served a decently long apprenticeship. It must be twenty years since I first became part owner of a stock of bees in a skep. At present I have between fifty and sixty colonies in frame hives, and for a few years the number has varied little. I first caught the 'bee-fever' after hearing the expert lecture in the bee-tent at the 'Royal' Show held at York, and for some years my bee enthusiasm gave a quietus to nearly all my other summer hobbies. One needs to be in real earnest, though, to become a good bee-keeper; and without close attention, and a fair knowledge of the subject, success is seldom attained. In our neighborhood little else than clover honey is gathered; but few districts are better for this particular bee-forage. Years ago I used to go twenty-five miles to the moors for heather honey, but that was when the 'fever' ran high, but I still retain pleasant recollections of the former outings.

"My average take per stock for the last four or five years is between 50 lbs. and 60 lbs. Do I favor the Wells system? Yes; but the

bee-keeper must know his work, or he'll often find one end of his hive minus a queen. I invariably work those long combination hives—seen in front of the sun-dial in picture—as twin hives. Being compelled to economize space, I never disturb two single stocks in order to establish them in a Wells hive; but for working up small stocks (nuclei of the previous season with young queens) I find the system works well, and the result satisfactory. My dummies always become blocked with propolis, but I don't trouble, having little fear of the bees disagreeing if both lots are allowed access to super at the same time when honey is coming in.

"I never have many swarms; but in order to have young queens I usually get my cells from the few stocks that do swarm, and find this a convenient way of getting the necessary

"I have, of course, my favorite hive (my own invention, you may be sure); the bees, perhaps, are not so conscious of its many 'points.' Anyway, the result doesn't show it off much more favorably than it does some of the other patterns."—*British Bee Journal*.

THE ORANGE-TREE.

BY J. H. MARTIN.

The fruit-bloom in Southern California is quite a factor in the production of honey; but the most of it from the peach and the apricot, and many other fruit-trees, goes to brood-rearing. It matters not how many peach-orchards surround an apiary, we never hear of peach-blossom honey upon the markets;



APIARY OF C. ATKINSON.—FROM BRITISH BEE JOURNAL.

young queens, and I think queens raised in this way compare favorably with those bred on advanced and approved lines. I don't like pure foreign bees for Yorkshire, but nearly every hive in my apiary shows the Italian cross. Foul brood I've had no experience with, nor do I wish to have any.

"I run my hives mostly for extracted honey, and I think 180 lbs. is the most I ever took from one colony. In recent years, however, I have not troubled with a separate account. Have I much trouble in disposing of my honey? No, not a great deal, and, as a rule, I keep over each year about a quarter of a ton, and then, if the crop is a failure, as it is apt to be some seasons, I am still able to supply my most regular customers.

and if there is any produced for commercial purposes it is found mixed with honey from other sources.

The orange-tree, however, produces a profusion of bloom upon which the bees work industriously; and where the orchards are most abundant there is quite an amount of that quality of honey produced.

Orange-growing is increasing every year; and to give your readers an idea of the magnitude of the business I would say that the shipments for the past year were 12,000 car-loads; and but for the damage done by frost it would have been over 15,000. From present indications there will be 20,000 car-loads of oranges to ship during the coming year.

The orange-tree is an evergreen, and beau-

tiful at any time. The clean smooth trunk and limbs, the dark-green foliage, and symmetrical form, make it a veritable aristocrat among trees. The golden fruit enhances its beauty, and it is not uncommon to see the fruit and bloom on the tree at the same time. The blossoms in the photo are nearly natural size; and when in full bloom the tree is a mass of white, reminding one of a bride adorned for the marriage.

The blossoms are very fragrant, and the air is filled with the perfume, much resembling

orange has such a strong odor that, if a breeze is setting toward the apiary miles away, the bees catch the odor and follow it; and, while they get a little honey, the distance is too great for them to get it in paying quantities.

Orange honey is of fine flavor and color; and as there is but a limited amount produced it should command an extra price. Dealers, however, do not hesitate to brand whole car-loads of honey as orange, when it is something entirely different.

With the increasing acreage and the in-



BRANCH FROM ORANGE-TREE.

the odor of the old eastern lilac. The bees work with utmost industry while the groves are in bloom in April or May, and they will fly several miles for the nectar. The writer knows that his bees secured orange-blossom honey from an orchard six miles away, and recently Mr. Wilkin has written me that his bees were getting orange honey from orchards eight miles away. Ordinarily bees will not go so far. I doubt if they ever were known to go so far for peach or apple bloom; but the

creasing size of the present trees, there is no reason to doubt that, in the future, a large amount of this honey will be produced, and it will be possible for us to sell it upon its merits.

Oro Fino, Cal.

[Genuine orange honey is fine in flavor, not unlike that of the fruit itself; but as Rambler says, it is very limited in quantity. At least we have never been able to get hold of the genuine article.—Ed.]



SUNDRY QUESTIONS ANSWERED.

A correspondent, after telling that he has just commenced to take GLEANINGS, and intimating that he is only a mere tyro at bee-keeping, desires me to answer several questions in short plain style, which I will endeavor to do, not only for him, but because some of them have been asked by several others.

PURCHASING BEES.

Question.—What price ought I to pay for a colony of Italian bees in a movable-frame hive?

Answer.—Much depends upon the season of the year and the condition of the colony. They are usually sold for from three to four dollars in the fall, and from five to six in the spring. The reason for the difference in price seems to be the risk in wintering. Some winters bees winter universally well, not only with the specialist, but with the novice who knows nothing about getting bees in good shape for winter. Other winters, like the early eighties, from fifty to seventy per cent of all the bees die throughout the United States and Canada. If ten or more colonies are purchased of one party the price should not be over \$3.50 in the fall for each colony, or \$5.00 in the spring, the buyer receiving all good ones at that. Colonies could be bought for less; but good first-class colonies, in good frame hives, ought to command as much as that, even in these low prices for honey, and I would not advise a beginner to purchase poor colonies to start with. In an average season, in a favorable locality, such a colony of bees should give fifty pounds of comb honey, besides one good swarm. That is, the old colony and the swarm should produce that amount. The honey should bring ten cents per pound, or \$5.00, which would give the purchaser his money back, even if he lost one of the colonies, or fifty per cent of his bees during the winter.

DISEASED BEES.

Question.—Are bees seized with disease or epidemics?

Answer.—There is only one of any amount, aside from our occasional wintering troubles, and that is termed "foul brood." The cause of our wintering trouble, "doctors" do not agree upon, some claiming that continued cold causes it; others, confinement, dampness, pollen, lack of ventilation, etc. Whatever may be the cause, our greatest mortality occurs during the latter part of a long steady cold winter, an open winter being favorable to the successful wintering of bees.

Foul brood is of a different nature. The character of the season has nothing to do with it. So far it is doubtful whether any know the cause, except to guess at it. However, all agree that the disease is carried in

the honey. One bee-load of honey taken from a diseased hive to a healthy colony is sure death, in time, to that colony, unless the bees are driven from their combs to a clean empty hive; so the greatest possible care should be used, where a colony is discovered having the disease. For symptoms and cure I would refer the reader to the A B C of Bee Culture, as published by The A. I. Root Co.; and not only for foul brood, but for all general information on the subject of bees. No beginner should try to keep bees without first procuring one of the many good books we have on the subject of bee culture.

COST OF BEE-HIVES.

Question.—What should be the cost of a bee-hive 16x24x11, with chaff box and tin cover, the same to be painted two coats?

Answer.—I should guess from \$3.00 to \$4.00 for a single hive; while if ten to twenty were wanted at one time, \$2.50 each ought to buy them, including frames, sections, and all. But, let me ask, why make such a hive? It is out of the regular size of hives, and could not possibly give better results than any of the hives now in use. There are four styles of hives in quite general use—the Langstroth, Quinby, Gallup, and American, any of which would give as good results as the one spoken of, and at a less cost. Besides, all of the sections, frames, etc., to these hives fit the shipping-cases, extractors, and other conveniences manufactured by most of our supply-dealers. A complete Langstroth hive can be bought at considerably less than the lowest figures quoted, in lots of ten or more.

HONEY-YIELD.

Question.—How much honey should an Italian colony average annually?

Answer.—Very much depends upon the location and management. Taking the United States through, fifty pounds per year to a colony, on an average, among the bee-keeping specialists, is about what they secure. My average yield for nearly twenty years, up to the time I went into the queen-rearing business to so great an extent that I had to weaken nearly every colony in the apiary to make queen-rearing a success, was about eighty pounds to each colony, spring count. Best average during any one year was 166 lbs.; poorest, 30 lbs.

ALSIKE CLOVER.

Question.—Does alsike clover suffer from drouth?

Answer.—To about the same extent as does red clover, as it has a very similar root; but no kind of clover is infallible as to its honey yield. Very dry or very wet weather is against the secretion of nectar in flowers, and especially are cool or cold nights damaging. In my opinion this last is the cause of more failures of honey than all other causes combined, unless it be days in succession of cloudy rainy weather, together with high winds, which prevent the bees from leaving their hives in search of stores. There is an occasional season when bees are kept at a loss, seasons in which they hardly secure a living

during the summer months, saying nothing about laying up stores for winter.

WAX-MOTHS.

Question.—Is there any danger of losing colonies by moths or other insects?

Answer.—The larva of the wax-moth is about the only real enemy the bee has. These feed upon the combs, and in very weak colonies often destroy the combs, changing them by consumption from the nice symmetrical cells for brood and honey into a mass of webs and cocoons. However, there are no good colonies destroyed from this source, especially Italians. In fact, where pure Italian bees are kept exclusively, these pests are rarely ever seen. Still, combs not protected by bees are always subject to their ravages, and should be looked after during warm weather. If signs of worms appear, the combs should be placed in a tight room, barrel, or box, and fumigated with burning sulphur, having all fixed so there can be no possible danger from fire. The section honey should also be watched, after it is taken from the hives; and if many combs are seen having little white flour-like spots or lines upon them, these should be sulphured. Much more care is required in fumigating them than is required in treating the brood-combs, for, if too much sulphur is burned, it will give the nice white combs a greenish hue which deteriorates its market value; one ounce of sulphur to every 25 cubic feet, in box or room, is about the right amount to burn. After the smoke has been confined for ten or fifteen minutes, let it out by opening a door or otherwise. No such precaution is necessary with the brood-combs, and for them I generally use twice the above quantity.



THE MOSQUITO-HAWK AN ENEMY OF THE BEE; A REPLY TO A. J. WRIGHT.

Mr. Editor.—We notice on page 471 an article from A. J. Wright in which he seems loath to believe that the mosquito-hawk, or dragon-fly, is an enemy of the bees. However, he modifies his position somewhat by saying he does not know what the "heated atmosphere" of Florida may be capable of producing in the way of dragon-flies. Whether the "atmosphere" produces them or not, we can assure the gentleman that they appear from some source in countless myriads, and I have watched swarms of thousands of them catching bees. We don't doubt that they catch mosquitoes. Surely such vast hordes should be good for something, and we are ready to admit their beauty and all that; but one's appreciation of the beautiful fades somewhat when he sees his bees vanishing by the thousands. We are thankful to say they do not bother us all the time; but when they do come it reminds us of an old-fashioned visit of the potato-bugs in the North—very trying to

one's nerves while they are with him. Perhaps if we say the mosquito-hawk is a cannibal it will raise a protest; and if we say they will even devour themselves to a certain extent, it will not be believed; yet such is the case. If we remember rightly, it was H. E. Hill, editor of the *American Bee-keeper*, who tried the experiment, proving conclusively that they would devour each other, and even eat themselves as long as life lasted. The dragon-flies of the North are comparatively harmless, as they are not numerous; but here it is different, as they come by tens of thousands. Any bee-keeper in Florida, especially those near the coast, can testify to the destructiveness of the insect from experience.

M. W. SHEPHERD.

Mannville, Fla., July 1.

HOW TO START FOUL BROOD.

The subject of foul brood being started from chilled brood has been mentioned several times in GLEANINGS, and has been called spontaneous generation. I do not want to be misunderstood. I do not believe in spontaneous generation any more than Mr. Root does; but I say foul brood can be started by chilled brood, for the germ necessary to produce it is in every healthy larva, but unless it dies and decomposes in a certain way it will never develop. In 1892 I started some nuclei for queens. The bees deserted them the same day. I cut out considerable drone brood, and put it in a pile in one corner of my bee-yard. That night it turned cold, and the brood froze a little. Finding my bees had left the brood I had put out for nuclei I piled it all in a heap. In about ten days I went back, and it smelled very badly. I found some bees sucking at it, which I did not want for decency's sake; so I put it in a tub and poured water on it, put a rock on it to sink it, went back a few days later, and found thousands of bees watering there. I at once put it in a pot and boiled it. In June, after about two months, I found some foul brood. I began to investigate, and found it in 20 or more hives, and soon found it in 50 or more.

I asked permission of Mr. Atchley to bring a piece of comb to his house, securely wrapped, for him to examine. He granted it, and he and Dr. Howard and Dr. Marshall all said it was foul brood, and a bad case at that, and told me it would kill all my bees; that there was no cure for it. The cure, I found, was a mistake in them, for I did cure it. I examined all the bees around me, but never could find but one small lot close to me that were diseased; so I have believed with all my heart it began there. This is a matter that can be settled by trying the following plan. If it does not start foul brood, the man who experiments may draft on me for \$5.00, which will pay for all the trouble it will cost him. Here is the plan:

Cut out about 3 gallons of brood, both drone and worker. Put it between ice, so it will freeze to death, then put it out in some warm place, about 70 or 80 degrees. Keep it in bulk, and moist all the time for ten or twelve days; then put it in water, and make the bees sip at

it a few days, and that will be sufficient. If you can not find foul brood in your hives in the second catch of brood hatched, draft on me, First National Bank of Van Alstyne, for \$5.00.

J. F. TEEL.

Elmont, Tex.

[I do not think there will be very many, friend Teel, who will want to try your experiment. We'd rather accept your word for it.

A knowledge of how the disease may be produced may be helpful in showing how a cure may be effected. It would certainly point out one of the means for prevention.

I will explain that friend Teel wrote us, some time ago, stating that foul brood would develop from dead brood. I understood him to mean that such brood would invariably develop the disease. I accordingly wrote him that that could not be true; for corn could not grow where none was planted, and that disease could not be generated unless the microbes were already in the body; that spontaneous generation was an exploded theory. It now appears from the article above that friend Teel accepts all this, but takes the ground that foul-brood germs reside in *all* healthy bees, and that, under favoring conditions, they will develop, and cause what is known as "foul brood." This may or may not be true.

We know that, when a person is all "run down," he is much more liable to have an attack of typhoid fever or some other infectious disease than one who is in perfect health. Indeed, I believe that, if one is perfectly healthy, he will be able to resist almost any contagious disease.

Referring to Teel's theory I should rather take this view of the matter: That the *Bacillus alvei* germs (foul brood) may or may not be present in the yard. If the brood is allowed to die, and it is subjected to treatment like that described above, these floating germs by some means might find lodgment in the dead tissue; if so, then foul brood will develop; but if they are not present, then the dead brood simply dries up and does no more harm than so much inanimate matter. This, I think, accords with the theories of our best physicians and scientists.—ED.]

FOUL BROOD.

Mr. E. R. Root:—Your letter of July 5, with reference to the foul-brood pamphlet which you are getting out, was received, and the proof carefully read. Your pamphlets will be of great value to the bee-keepers of every land, and all who keep bees or ever intend to do so should get one just as soon as they are out.

I am pleased to learn that you are going to publish in the same pamphlet a copy of the Wisconsin foul-brood law, which was prepared by Mr. N. E. France, of Platteville, Wis. It is perfect in every respect, and is by far the best in the world. It was through a recommendation from Mr. Hutchinson that I was chosen by the New Jersey State Board of Agriculture to write that article for their foul-brood bulletin.

Every bee-keeper in the world should get one of Dr. Howard's books on foul brood, as well as the very valuable one that you are getting out.

WM. McEVoy.

Woodburn, Ont., Can.

LARGE AND SMALL HIVES; SECTION-HOLDERS PREFERRED TO T SUPERS; PLAIN SECTIONS TOO LIGHT IN WEIGHT.

Our climate here in Arkansas is quite different from that of Ohio or New York. Our seasons are much longer, but the flow is not so great. Our greatest flow is about the 20th of May.

As to hives and inside fixtures I have tried several different kinds—the little box, the big box, the tall box, the low box, the lying-down, or long-idea hive, and the old-fashioned Armstrong and L. hive; and, last, the eight-frame Dovetail hive, which I have adopted entirely, as the size is better adapted to our seasons and climates than the larger ones.

Four or five years ago I commenced with about ten box hives, and purchased a few of your Dovetailed hives equipped with the Hoffman self-spacing brood-frames, with section-holders, using $4\frac{1}{4} \times 1\frac{1}{8}$ sections, and I found them to be just the thing. I have now 80 hives of that pattern; after using several other kinds of super arrangements, including the famous T super, I can say this, that Dr. Miller and his followers can have all the T supers, as I would not use them when, in my judgment, the section-holder arrangements are so far ahead.

Now as to fence separators and plain sections, I am trying them this season, and can say they have not proved satisfactory. Some claim they do away with pop-holes, or beeways, in the corner; with me it is very different. The holes are there just the same, and do not hold out in weight, as I have some well-filled ones that weigh from 14 to 15 oz., while the $4\frac{1}{4} \times 1\frac{1}{8}$ weigh from $15\frac{1}{2}$ to $16\frac{1}{2}$ oz., which gives better satisfaction in the market. However, I shall try them more fully before I pass the death-sentence. Mr. Pettit's idea of perforated dividers, or separators, described on page 47 of January 15th GLEANINGS, is just my idea. It gives better-filled sections, and gives freer passage for the bees; and I am sure those who use them would be willing to pay a little more for them.

HARRY HAWKINS.

Van Duzen, Ark.

[I saw a plain section at a restaurant in Cleveland that had corner holes in it just the same as the old style. On the other hand, I have seen plain sections that had no corner holes. During this year of scant nectar supply, it would not be surprising if the sections should not be filled out as full as on years when the supply is plenteous. That might account for your plain sections being under weight. But even if it did not, the tendency in nearly all markets is for still lower weights; and in Canada they want a section, I believe, that runs not over 12 ounces; and I notice there is a tendency toward a similar weight in this country. There was a time when sections

full 2 inches wide were the only ones sold. Then came $1\frac{1}{2}$; still later, $1\frac{1}{4}$. So far from staying at this size it has a tendency to go under rather than over.—ED.]

SPECIAL PREMIUM AWARDS AT OMAHA.

The following special premiums are offered in advertising by the *Nebraska Farmer* in the Apiary department of the Trans-Mississippi and International Exposition :

1. For the best, largest, and most complete display in apiary goods and supplies.....	\$10 00
2. Best and largest display covering the greatest number of varieties of comb honey, quality and marketable shape to be taken into consideration	5 00
3. Best and largest display covering the greatest number of varieties of extracted honey, quality and marketable shape to be taken into consideration	5 00
4. Largest and best display of designs of bees-wax work.....	3 00
5. Largest and best display in unrefined beeswax	2 00
6. Largest and best display of bees and queens...	3 00
7. Largest and best display of honey-producing plants, mounted, with their botanical and common names attached.....	2 00
8. To the person giving the best exhibition, on Trans-Mississippi honey-day, of handling bees and extracting honey.....	5 00
9. To the State making the best display of honey, bee-supplies, bees, and queens, on Trans-Mississippi honey-day.....	5 00
10. To the person making the best display of honey, bee-supplies, bees, and queens, on Trans-Mississippi honey-day.....	3 00
11. The best and largest display of culinary products in which honey is used instead of sugar	3 00

The above special premiums are open to the world, and will not in any manner interfere with awards to be given by the exposition. Bee-journals of the United States and Canada, please copy.

E. WHITCOMB.

Friend, Neb.

APIS DORSATA.

Mr. E. R. Root:—I have read with a great deal of interest your report of Mr. Benton's experience with *Apis dorsata*. I have made every inquiry about them here from the natives. They all tell great stories about what I take to be the same, but I have not heard of any in reach of me yet. Last week I had two days out in one of our largest jungles; but on inquiries of the jungle patrol I was informed that while usually many bees are found in the jungle, this year they seem to have failed to show up. Every thing seems to point to their being migratory. However, the fact that the government lets out the gathering of honey and wax to a contractor whose business it is to make his profit by seizing every colony he can find at its highest development, may indicate a habit which, if the bees were undisturbed, would not exist.

This year has been a very busy one with me, and I have not had the opportunity to give either time or serious thought to the matter; still, I am gradually accumulating information that will be of assistance to the cause in the end. Beeswax sells here in its crude state for about 20 cents a pound.

If I had time I would write you of some other bees I have found—interesting merely—and send you specimens. I mean to later. At

present the rain is coming on us with our bungalow not yet quite ready, and I am at work almost all the time.

W. E. RAMBO.

Damoh, C. P., India, June 9.

[I will explain that Mr. Rambo is the missionary friend who is looking up for us *Apis dorsata*. As soon as he can procure queens he will make an effort to send them on to us. He expects, of course, to see what he can do in domesticating them in their own climate.—ED.]

THE HONEY-PLANTS OF SOUTH DAKOTA.

It is very interesting to watch the work of the bees at this time of the year in the fields. To-day, July 11, they are very busy on prairie clover, botanically known as *Petalostemon*. There are two varieties here—the white and the violet. The white is now blooming; the violet will be in a week. The bees work all the day long on these, and get considerable honey from this source. I notice it is white, and of good flavor.

The "shoestring" is now in bloom, and bees work on it. You can always tell when shoestring comes in bloom by the pollen the bees bring in. It is a vermillion red. There is no other pollen so bright. The honey is of excellent flavor, but of a peculiar purple color. It looks in the cells like light-colored amethyst. Last year I had several Mason jars full of it, colored like some of the bottles in the windows of drugstores.

The Rocky Mountain bee-plant (spiderwort) is commencing to bloom, and the bees are crazy over it in the early morning. It is indigenous here, as is also the Simpson honey-plant. These two grow together in the gulches and ravines and along the creeks, and abound all along the Missouri River. The Simpson honey-plant is done blooming. The seed is very small, but could be gathered easily by stripping the pods off the stem. A neighbor of mine has two acres of sweet clover, so tall that I can not reach the tops, and I am 5 ft. 10 in. The stalks are fully half an inch in diameter. If that would not tire a cow's jaw to eat it, what would? Still, they eat it here when it is small, and hunt for it.

Catnip is coming on. I have a patch of it about four feet high, and I am inclined to believe all that Quinby said about it as a honey-plant. My bees are on it every day, and all the day long till dark. I believe it would pay well here in Dakota to have an acre or two of it planted and cultivated like corn. I sowed seed last fall that produced plants that are now beginning to bloom.

For comfort and all-around satisfaction, give me a two-story hive, either chaff or single-walled, with a good honey-board, a Porter bee-escape, and an extractor.

STEPHEN J. HARMELING.
Marion, Turner Co., So. Dakota.

[Very good, friend H.; but why don't you tell us how much honey you get? With such honey-plants as you name, it seems to me you ought to have a pretty good yield. Some way or other we have got the impression that the

dry summers of South Dakota are not, as a rule, favorable to bee culture. We should be very glad indeed to be told we are wrong.—ED.]

COMBS INSTEAD OF DUMMY BOARDS; PLAIN SECTIONS IN THE IDEAL SUPER, PERFECTION.

Several days ago, while making "dummy boards," with the view of using them for contracting the brood-chamber when hiving a swarm, the thought occurred to me, "Why not use two or more frames from the old hive, instead of dummy boards, and give the old colony the frames with starters in, that are taken away from the new colony?"

We have often been told to place the new colony on the old stand, and then take some of the frames, filled with young bees, from the old colony, and brush them in front of the new, and let them go in, thereby further depleting the old hive. If given two frames of brood, in all stages of development, from the egg to the imago, I want to know if such frames are not just as good for all practical purposes as two dummy boards.

Aside from what I have inquired about, I wish to say that I am giving the Ideal super a trial this year. About the 25th of June I put a few of them on my eight-frame Dovetailed hives. Yesterday afternoon, July 12th, I removed one of them, and found 27 out of 30 as complete sections as I ever saw. If the super had been unmolested 24 hours longer it would have been as complete as could be. The photos heretofore shown in GLEANINGS were not superior to the work done in my apiary in the Ideal super. I heartily commend the Ideal to all progressive bee-keepers throughout the land.

R. B. ARNOLD.

Foster, Ia., July 13, 1898.

ANOTHER APIARY TOOL.

Mr. Root:—You ask for a simple all-purpose apiary tool. I will suggest a simple one for your consideration. It is a large butcher-knife, the end square for scraping the tops of frames, also the bottom-boards, in a small



way. The back should be thick for forcing out wedges from supers. The edge is not ground within $\frac{3}{4}$ inch of the handle, so as to make a better pry on the end of the super in forcing the wedges. The end of the handle should be metal, to hammer with. In the one I use the blade is $\frac{3}{2}$ inch thick and $7\frac{3}{4}$ long. It is not shod with metal, but I often use the end as a hammer. For prying off covers the end of the blade does very well, and I can lift the heavy supers by forcing the blade in at the corner near the handle, and twisting or turning the knife. The knife is used, of course, for cutting and prying combs loose, and for many other uses.

E. A. CHANDLER.

Mesilla, N. M., June 12.



C. M., Ohio:—There is some honey-dew this year—some fair quality and some miserable stuff, as you describe. If it is very bad, extract it and feed sugar rather than let the bees use it for winter. See editorials, this issue.

R. L. H., Ohio:—No doubt the reason your honey is colored is owing to the honey-dew that has been reported from several sections of the country. A very little of this stuff mixed with the clover and basswood will make it all "off color," and "off" in flavor in some instances.

W. B., Canada:—There are generally quite a number of queens, either hatched or in cells, at the time of the issuing of second and third swarms. Second swarms may have anywhere from half a dozen to a dozen queens, but usually not more than one or two.

J. M., Pa.:—If you have had foul brood in your apiary you ought to destroy all combs, boil all the hives and all the implements you have been using. Should you ever wish to start bee-keeping again, or should any one in your vicinity attempt to do so, the disease will be sure to break out. Before doing any destroying, make sure you have the disease. If you will mail us a sample of the comb from which the brood died, perhaps we can help you to determine whether you have the disease or not. But be sure to wrap it in a stout tin or wooden box, first wrapping the comb in absorbing cotton.

S. S. K., Wis.:—There are several ways of keeping queens a few days after they hatch until a place can be found for them in some nucleus or colony. But perhaps the most feasible way is the West queen-cage, illustrated and described on page 29 of our catalog. It should be used in connection with the queen-cell protector. When the cell is placed in the protector, the moment she hatches she emerges into the spiral queen cage, where she can be confined for several days. But the older she grows, the more difficult it will be to introduce her; for virgin queens a week or so old are not as easily introduced as laying queens.

J. H., Mich.:—It is possible your manner of handling the bees has a tendency to irritate them, for they should not sting, even the crossest of them, in the way you describe. When handling a cross colony I would recommend blowing half a dozen puffs of smoke in the entrance; then when the cover is lifted, pry up and blow the smoke in a crack that is not wide enough to let out the bees. Now raise the cover and smudge them down. Do not handle them after a rain, nor in the morning or evening. From ten o'clock to one and two is the best time. Avoid quick movements and jars. If you proceed as above indicated you will have less trouble, we feel sure.



DEEP ENTRANCES OR HIVES ON FOUR BLOCKS.

I OMITTED to mention in our last issue, in referring to Mr. Burt's opinion of deep entrances, that he had tried hives raised up on four blocks, as mentioned by Dr. C. C. Miller. While it reduced swarming and prevented clustering out, yet when they did swarm it was a big nuisance to find the clipped queen, "because," said he, "there is an entrance on four sides of the hive, and one does not know where to look for her." The thought has since occurred to me that it is impossible to work over such hives without obstructing the flight of the bees to a greater or less extent. Then in going up and down through the rows between the hives one would be sure to obstruct the flight of bees, go which way he might. Mr. Burt used an entrance the full width of the hive, and two inches deep. This he thought more practical than raising hives up on four blocks.

Later.—Since writing the foregoing the following has come to hand, favoring the double entrance:

A PLEA FOR THE DOUBLE ENTRANCE.

Our hives are all made with a front and rear entrance alike, $\frac{1}{8} \times 13$ inches. Fourteen years ago I made a lot of wedge strips with the view of enlarging the front entrance to an inch, and doing away with the back entrance; but it didn't work. The enlarging of the front entrance is not equal to a direct draft through the hive, and for that reason I open the back entrance first; and when that is not sufficient I pry up the front end and put under the wedge strips. That gives a fine head opening; and sometimes, with a high wind, it might be too much of a good thing.

When the season is over I close up the back entrance, when the bees are not flying, to $\frac{1}{4}$ inch, and in the course of ten days I close the back entrance for the season. A few bees may come fussing around the back entrance, but their time isn't worth much, and they will soon find their way to the front.

T. R. SAWYER.

VISIT FROM D. E. MERRILL, OF THE W. T. FALCONER MANUFACTURING CO.

SEVERAL of us were out in front of the factory admiring some honey just brought in by Merton Chase, which his bees had put in plain sections, when along came a rider on a gear-cased Cleveland wheel. Without recognizing the man I called out, "Ride a Cleveland, and keep in front." "Just so," the rider responded. At this he dismounted, and introduced himself as Merrill, of the W. T. Falconer Co., Jamestown, N. Y. He had wheeled it some 33 miles from Cleveland—in fact, had wheeled it all the way from his home in Jamestown; but owing to rainy days he was not able to get here as soon as he expected, and consequently his stop would have to be confined to something like two hours.

"Oh my!" said I; "you *must* stay longer."

He would have been glad to do so, but he had made arrangements to get back to Cleveland at three o'clock, and so had to be there on time. Without further ceremony I ran

him over the establishment at a hop-skip-and-jump pace. As it was then nearly time for him to start back I told him he must surely take dinner before going. He was not in the habit of eating much in the middle of the day, and did not think then he required any thing more than a bowl of bread and milk. Well do I remember how such a "dose" "goes to the spot" after a long ride—something nourishing and *wet* for a parched tongue. We repaired to the house, and I called for bread and milk.



D. E. MERRILL.

I laughingly remarked that I should have to "go a piece" with him, as his visit had been so short. A bowl of bread and milk was then brought in for each of us; and while we were eating, my sister remarked (my wife was away visiting), "I shouldn't be surprised if you went clear to Cleveland."

"Hardly," I said. "That game ankle* would not push me to Cleveland."

Suffice it to say, we started out on our two Clevelands; and when opposite the basswood apiary we stopped to take a peep at that.

"Well," said I, "my game ankle is not bothering me so much, and I think I will go a piece further."

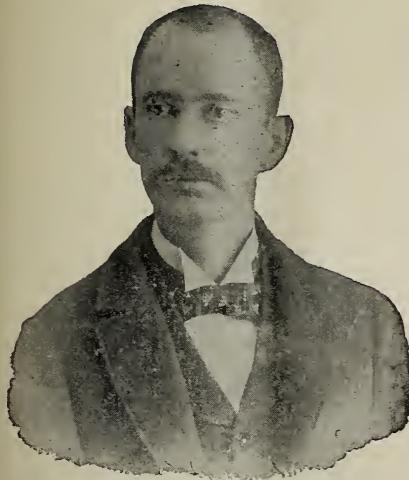
My ride and visit with friend M. were so enjoyable that, in spite of the occasional pain experienced in the aforesaid ankle, I found myself finally in the outskirts of Cleveland, some 27 or 28 miles from home, just in time to take a train that I could catch near by, back home.

I found Mr. Merrill to be a most agreeable companion, and, like myself, he is an enthusiast over bicycles, and the Cleveland in particular.

*A few days before, I had been out swimming in the lake, and "got the cramp," and, as a result, the ankle was still lame.

E. B. GLADISH.

SINCE our last issue we have been favored with a visit from Mr. E. B. Gladish, the junior member of the Leahy Mfg. Co., Higginsville, Mo. If I am correct, Mr. G. is foreman or



shop manager of the Leahy Co. He is a modest, quiet young man, and yet seems to combine the qualities necessary to run a shopful of men. He was here only half a day, and then went to Buffalo, N. Y. During the few hours we spent together I found him to be progressive, and alert to the "kinks" of his trade, and not only eager to impart but grasp that which is new. GLEANINGS wishes him a profitable and enjoyable vacation after his siege of long-hour runs.

RAISING QUEEN-CELLS A LA DOOLITTLE; THE HOME OF THE HONEY-BEES HAS MADE A SUCCESS OF IT AT LAST.

OUR Mr. Wardell, formerly of New Philadelphia, Ohio, and who has been with us for several months, has been experimenting with different methods of queen-rearing. Some little time ago he requested a copy of "Doolittle on Queen-rearing," and a few days ago he asked me to come and see what he had ; and, sure enough, he had twelve as pretty queen-cells, secured from Doolittle artificial cups, as one ever saw. They stuck down like great large peanuts from the bottom edge of the comb, and from the standpoint of a queen-rearer they were beauties indeed. I took several snapshots of these and of similar lots of cells that he had so secured, and hope to present you a view of them later. His *modus operandi* is as follows :

He prepares artificial cell-cups exactly as explained in Doolittle's book. These he grafts with larvæ from our best breeding-queen, and they are then stuck on the bottom edge of a comb or of a stick running horizontally across the brood-frame from which the comb has been cut. Cups so prepared are then put into a colony having an old queen which the bees are evidently trying to supersede. In such colonies these artificial cell-cups with their

grafted larvæ are accepted at once. After the cells are drawn out and capped over they are removed and put into another hive that he calls his "nursery." This hive contains a queenless colony ; and as it is strong in bees the cells are kept at the proper temperature necessary for the perfect development of the imago queens. On or about the ninth day the cells are cut out and slipped into one of Noah D. West's queen-cell protectors. This protector cage is then slipped into one of the hatching-cages, at the bottom of which are a few drops of honey to feed the young queen when she hatches. If she hatches the next day, or two or three days later, it does not make much difference. She is confined in the long spiral cage below, and can be taken out and introduced whenever he is ready for her.

Mr. Wardell finds that he obtains the best results by giving these artificial cell-cups to colonies that are about to supersede their queens. Such colonies do not become restive, but go right on building out and completing batch after batch of cell-cups. From one colony in particular he has taken three batches, and is now giving them the fourth. As they already have a mother in the hive they do not become discouraged, but go right on making the building of cells their specialty.

One great feature of the Doolittle system is that it enables one to rear *all or nearly all the queens from one selected mother*. In this case it happens to be the Alley queen, whose queen-daughters are beautiful as well as her bees. They are hardy, prolific, and hold their own with any other colony for honey.



Mr. Wardell is very enthusiastic over the Doolittle system, "because," said he, "my queens are all from one stock, and the very best I have."

EXPERIMENTS WITH THE NATURAL - BASE DRAWN FOUNDATION.

It has been unfavorable to test the new product. But judging from one colony we have been feeding, it would appear that drawn foundation with walls deeper than $\frac{1}{8}$ inch will not give us as friable and delicate a comb as that which is $\frac{1}{8}$ inch deep or less ; that is to say, when the walls are deeper than $\frac{1}{8}$ inch, the bees do not thin them down to walls of natural thickness. So far, tests go to show that drawn foundation having walls $\frac{1}{8}$ inch deep, and with natural bases, is taken by the

bees in preference to ordinary foundation, in every instance.

Perhaps some may think that a dollar a pound for foundation is rather expensive. So it is, but it is in the experimental stage. Even at a dollar a pound it is not too expensive to use as starters one inch deep top and bottom; that is to say, it costs no more than ordinary foundation in full sheets, and I am of the opinion it will be better bait for the bees—far better. However, we solicit tests of it in full sheets so that we can determine whether it will be advisable to make larger dies whereby we can reduce the cost of drawn foundation so that it will be within the reach of bee-keepers.

SLANG IN BEE-JOURNALS.

THE critic of the *Review*, Mr. R. L. Taylor, singles out some of the slang phrases that have appeared in *GLEANINGS*. For instance, he refers to the word *scrooch* where I speak of bees "scrooching down" to pass under an obstruction; to the word *sass*, where I in a friendly way say "I would rather sass Dr. Miller than any one else;" to the word *smoled* instead of *smiled*; to the word *snide* (I borrowed this from the *Am. Bee Jour.*) when referring to a commission house. I grant that I do, once in a great while, use some expressions that are not in the dictionary; but if I do so it is because they convey for me a certain shade of meaning that can not be imparted by any of the dignified, staid synonyms.

But, friend T., why single out GLEANINGS? How about the expression "hoopee" from the dignified editor of the *Bee-keepers' Review*? And how about another expression he uses in the last *Review*, wherein he says the Western people, referring to Omaha, will take care of us in "great shape"? and another expression that he used, wherein he said that bee-keepers were "on to" certain commission houses that were carrying on certain practices that are not entirely above reproach?

I am no advocate of the free use of slang; but there are times when, in a limited way, it seems to me it may be used without offense. Besides, we should not forget that the correct idiom of to-day was the slang of yesterday. The word "outsider" is as good a word as there is in our language; but it was made to meet a demand in 1841, when it was denounced as pure slang. The word "mugwump," formerly slang, is now recognized by the Standard Dictionary. The word *popocrat* is perhaps serving its probation. W. P. R. says slang is language in gestation — formed but not born. The expressions that I picked from the *Review* were very expressive, and they did not in the least jar on my sensibilities.

If some of my English is not as good as it might be, it is because all that I "write" for GLEANINGS is dictated to a stenographer, often amid frequent interruptions, and when I hardly know how to spare the time even to talk it off.

talked of than now. Indeed, it was causing trouble by spoiling otherwise first-class honey, and it was found to be, in many instances at least, a very unsuitable food for winter. Since 1885 we have seen very little of it. In fact, there have been almost no references to it in any of the bee-journals, and I have hardly seen or tasted any thing of it since. But this year, when the season has been an almost entire failure in most localities, the old familiar "bug juice," as the stuff was sometimes called, is being reported from various sections of the country. Several have sent us samples of their extracted honey, wanting to know what was the matter of it. Examination shows a small amount of honey-dew. White clover started out well, but later in the season the bees gathered some dark stuff, and this, when extracted with the white honey, made for them an inferior grade of extracted.

Over and over again samples of honey-dew (pure stuff) are sent, and we are asked what the "stuff" is. Sometimes the flavor is sickening, and the color almost black. Then, again, it is light in color, and rather pleasant to the taste. I fear there will be some extracted honeys this year that will be off in flavor, just because of a little mixture of honey-dew.

For the benefit of some of the later readers, perhaps it will be well to explain what honey-dew is. It is a secretion or excretion usually found on the leaves of trees; and in most cases it is the product of an insect. This saccharine matter sometimes dries on the leaves. After a light rain it is moistened, and then the bees will roar around the trees and tumble into the entrances as if they were working on basswood. If the storm continues the sticky stuff will be washed off the leaves, and the poor bees will be humming around for that which has suddenly disappeared; and then, my, oh my! how they will sting! just as if you and I were to blame!

This peculiar secretion is usually found on the leaves of maple-trees. In such cases it comes from the maple-bark louse. Sometimes it is present on the leaves of hickory, and then, again, on low-spreading bushes. Whether the insects deposit it or not, this peculiar kind of "dew" sometimes falls in the form of spray, and many and many a time the sidewalk under the trees will be marked or spotted with the "juice." Honey-dew was formerly supposed to be a real dew from heaven, hence its name; but it is now known that the greater part of it is the product (or, more properly speaking, perhaps, excreta) of insects. But there is a kind of honey-dew that is a secretion from certain fungi, and also the leaves of certain plants. That this is true is proven without doubt.

But perhaps some of you may say, "What am I going to do if I find some of the stuff in the brood-frames?" I would do nothing about it at all—just leave it there. Our knowledge of wintering has progressed so far since 1885 that I believe the majority of bee-keepers will be able to winter their bees on this food almost as successfully, perhaps, as on the best sugar syrup. Indeed, I am coming to believe

HONEY-DEW — ITS SOURCE

ALONG in the early '80's, especially in 1882 and '84, honey-dew was a good deal more

that the food has less to do with successful wintering than we formerly supposed it had; for we have for years wintered our bees successfully on all sorts of stuff, even including the vile "bug juice," of which we had so much in our hives during the winter of 1884. The loss that year was only 5 per cent, and there were heavier losses that year, attributed to honey-dew, than any year since 1881.

CONTRACTION AND TWO-STORY COLONIES, AGAIN.

"OPEN confession is good for the soul," says the editor of the *Review*; "and," he adds, "I am going to admit that bee-keepers have practiced control of the brood-nest at the beginning of the harvest. The editor of GLEANINGS shows most conclusively by reference to articles right in the *Review* that such things have been done. . . . It is true, as Bro. Root says, that this kind of contraction has been abandoned, and has been abandoned so long and so thoroughly that I had really forgotten it."

In referring to what I have said in regard to the use of two or more eight-frame brood-nests when working for comb honey, that I had secured more honey from them than from a single eight-frame hive, he says:

I do not doubt that: but to make the matter right he ought to get twice as much. Here is an eight-frame hive standing this side of the apple tree. On the other side is another eight-frame hive. Let them alone as they are: put on the supers, and we get 50 lbs. of surplus comb honey from each colony. Set one of these on top of the other, and if we do not get 100 lbs. we have lost.

The point is well taken, Bro. H.; but I had it in mind, though I am not sure I called attention to it. I will give one instance to show why I based my preference as I did. In the north row at our basswood yard, during the season of 1897, was a one-story eight-frame hive. This secured 25 lbs. of sealed honey, but no more. Just back of it was a two-story colony that filled one set of extracting-combs and one super of 28 sections. The last named produced somewhere about three times as much honey, but at the time I did not think it had more than twice as many bees. The first-mentioned colony swarmed, and then secured 25 lbs. of comb honey. The parent hive did almost nothing, doing hardly more than to fill its brood-chamber with brood and a little honey. The other colony did not swarm, and was wintered as a double-story colony, and this spring it was the best working stock, and by all odds the strongest, of any thing we had in the apiary, having wintered perfectly.

Now, I will be frank, and state that some colonies in the double-deckers did not do twice as well as some of the single-story stock. But the average of the double-deckers did better than the average of the singles. In the case of the two and three story colonies, we have only one cover and one bottom; but in the case of the one-stories we have one cover and one bottom for every brood-nest. But suppose a two-story colony produces only twice as much as a single story. We have

eliminated in part the swarming propensity, and we have saved the expense of one cover and bottom, and the value of one queen. But, over against this, my friend Vernon Burt, who lives only about four miles north of us, is of your way of thinking, as you will see by our last issue.

AUTOMATIC NON-SWARMING APIARIES.

No, not exactly that, for there is no such thing as an absolutely non-swarming colony nor a non-swarming apiary; and there is no such thing as a colony nor apiary that will take care of itself without any help from the apiarist whatever; but in these days of low prices it behoves the bee-keeper to cut down the one item of labor as far as possible. In my advocacy of double-decker colonies I have had in mind something that would be as nearly automatic as possible, taking into consideration bee nature and man nature. Bro. Hutchinson, in previous column, thinks we have gained nothing if a two-story gathers no more honey than two one-stories. In the generality of cases I am firmly of the opinion that one double will give a greater amount of honey than two singles. But let us assume, for the sake of argument, that the big colonies will do no better. They are not as subject to being robbed, are far less liable to starve in spring or fall; winter better, and are much less inclined to swarm. Now, if this is true it is plain they will require less labor in caring for them; and assuming, as at first, that they will secure no more honey than the two singles, we have expended a great deal less labor for a certain amount of honey, and saved the expense of one bottom-board and cover, and of one queen.

For several seasons past, our basswood apiary has been managed almost entirely by myself. If I had tried to take care of them on the single-story plan, I should have had to go down there nearly every day, and, worse than all, been present at that time of the day when swarms are liable to come forth or else lose quite a number. As it is, I go once a week or once a month during the season—sometimes twice a week; for I know that an apiary managed on the double-decker plan is very largely non-swarming. Why, I believe such a yard requires about one-half the labor of an apiary run on the other plan. One of the principal items in the cost of honey is labor. If we can cut down half of that item, or a large part of it, we have reduced a large part of the cost of producing honey. On the double-decker plan one man should take care of four or five apiaries, where it might hustle him to take care of two on the one-story plan.

This is an interesting question, and needs to be considered in connection with one's locality. I do not, therefore, claim that the running of double-deckers is the way for *all* localities; but I do feel that the average bee-keeper has been trying to get along with stocks that are too weak.

Mr. Burt agrees with me exactly on this point; but by feeding in the spring, *a la* Boardman, he thinks he can secure stocks strong enough for his purpose in a single eight-frame brood-nest.



And be sure your sin will find you out.—NUM. 32:23.

Sin is folly, and our text explains *why* sin is folly. It is folly because, sooner or later, it is going to be found out. Oh! why is it that humanity, with all the examples that are strewn before it at every turn, can not learn that it *pays* to be honest? Now, dear old friend, do not think that I mean to commence this tirade by taking it for granted that I am honest, and that all the rest, or the greater part of them, are dishonest, for it is not true. I can truthfully and honestly say, "Why in the world can I not learn through all the examples that are round about me, that dishonesty and deceit do not pay?" You ask if I really own up that I *am* dishonest? In one sense. There is a constant temptation running all through my life to keep things out of sight that do not look well—to keep on doing selfish things, and to try to cover them up or to make it appear that my motives were good ones instead of selfish ones. I do not believe, however, that these wrong things go on very long. The presence of the Holy Spirit I am praying for every day (and I hope I may say *feeling* every day), is constantly prompting me to repent and reform, and make good my shortcomings. The great difference between the Christian and the unbeliever is, in my opinion, this: The Christian is being constantly prompted to repent, and fight down these selfish tendencies. The unbeliever may be prompted to a certain extent in the same way by public opinion and things of a like nature; but he is not looking constantly to the great Father above, and asking him to reprove and rebuke him whenever he is going wrong. A beautiful passage in the 139th Psalm, verses 23 and 24, brings this with wonderful vividness before us:

Search me, O God, and know my heart; try me, and know my thoughts; and see if there be any wicked way in me, and lead me in the way everlasting.

The matter alluded to in the above has been brought vividly to my mind at this season of the year, because, as usual, we have been obliged to decide what help we shall keep and what we shall let go. Our board of managers have consulted with the foremen of the different departments, and considered which ones we should keep. As a rule, the newer hands are expected to lie off and give place to the older ones; and, other things being equal, this is the rule; but where one of the new hands shows unusual proficiency, or, what is better still, a clean-cut, honest, and conscientious spirit, we often keep such and let the older ones go. In fact, there is something inexpressibly sad to me, when we are dismissing help in the fall of the year. It comes along in the line of the homely adage, "A new broom sweeps clean." With the younger ones we can make allowances. I remember one quite small boy who came to help us early in the spring, among the plants. He was so

faithful, and did so well, and accomplished so much work in a short time, that I really felt proud of him; but after a few weeks he seemed to get tired of the monotony of setting plants, and did not accomplish as much as he did the first week. So I decided I would have to let him go, because he would be looking around to the right or to the left, seeing what somebody else was doing, and paying no attention, comparatively, to his own work. Finally the boy was wanted in one of the buildings. I told the foreman that the boy had much ability, but he seemed to get tired of his work after a little; but he concluded to try him. For about a week the boy did tip-top. In fact, he was better than some of the older boys. But his zeal seemed to decrease as before, until he was of but little use anywhere. Of course, I talked with him, and remonstrated, but the good effect was only temporary. Now, this case we can excuse, because it was only a boy; but I think that that boy's mother had better watch carefully, and see to it that this trait does not follow him through life.

As I have said, we can excuse such things in a child, and many children outgrow them. I know this, for some of the most faithful and capable men and women I have around me had this very fault when they were small. Do you know, friends, it has been a rare pleasure for me through all these years of "work and wages" to see boys and girls grow from childhood into manhood and womanhood, and while they grow physically to know that they have grown in grace and wisdom, and in the knowledge of the Lord? But, even though it is not a pleasant thing, I must go back.

I have seen those who seemed to be so sure *their* sins of this kind would not find them out that I have been obliged to let them go. Physicians have a list of diseases that are said to be, as a rule, incurable. Now, may God forbid that I should say that there are *sins* that are incurable; but sometimes I have been led to feel that it is almost that way. There are people who have been so habituated to cheating their employer that it seems almost as if they never *could* get over it. My first sad experience in this line happened so long ago that I think I can mention it without hurting anybody's feelings.

When I was in the jewelry business I had a sort of craze to manufacture gold and silver jewelry. I wanted to do this, because then I could give honest goods according to my notion. I applied to one of the down-east jewelry factories for a good man who could work solid gold and silver. Somewhat to my surprise they agreed to let me have a man who, they said, was capable, and the price he wanted was less than I expected. He proved to be all I wished, and I often wondered why his employers let him go. After he became pretty well acquainted, however, and settled down to a certain routine, I discovered why they were willing to let him go, and why he worked for low wages. First, he would get the daily paper under his bench, and, when no one was around, he would read the war-news, getting 25 cents an hour for so doing.

He had things planned and arranged so he could slip his paper out of sight when anybody came around who might report. Finally I found out he was making work for himself at odd hours. By playing detective a little I was finally able to prove that he received pay for all the time he spent on work of his own. As he was a good sort of man, and had done me quite a favor by leaving his home in the East, I good-naturedly let these things pass. Finally he solicited work from other people at lower prices than my own, doing said work on the sly while he was drawing pay from me. I felt that something had to be done. But even then for a time I put it off; but when it came to appropriating gold and silver, as well as precious hours of my time, for these outside jobs, I told him I thought we could not give him employment any longer. There are several things I want to say right here in regard to cases of this kind. The first is, that investigating and proving charges like the above is, to my mind, the most wearing and exhausting work that any one ever did. If any one thing will break down a person's health, it is being obliged to follow up and prove things of this kind. Again, with a life-long experience I am not yet prepared to say that it is always the best way, to tell a man plainly and squarely that you have found him out. First, there is a difficulty in proving conclusively things that are clear enough in your own mind; and, finally, you make a man a life-long enemy by telling him the truth, whereas if you simply tell him you do not need him any longer you and he may be on tolerably friendly terms if you happen to be near each other. Sometimes, by the grace of God assisting you, you can tell a man faults of this kind in a way that will make him a better man; but it almost always requires a great amount of grace to say just enough, especially when you are provoked, and not say too much or exaggerate the state of affairs.

Dear friends, I started out in this Home Paper to-day to say something that would help you—at least a great part of you; and may God give me grace and wisdom to say it as the Holy Spirit shall direct.

This thing I have spoken about is widespread. Men and women are complaining because they are out of employment. Some of them say that they can not get work because they are "not in the ring." But when I hear such speeches I feel almost sure there is no "ring" about it. More people are out of work because they are not *conscientious* and *honest* than for any other reason. Yes, even *women* are dishonest. God knows how it pains my heart to say it. Even women, mothers of families, those whom we have a right to expect to be all that is good and pure, seem to have either never heard our little text at the head of this talk or else they have such an opinion of their own shrewdness that they think themselves exceptions, and that their peculiar "sins" will never "find them out." Let me say to such, you may *think* your employer does—not know of the things you are concealing; but let me repeat with emphasis

the words of our text, "Be *sure* your sin will find you out."

No doubt many people think us needlessly particular in our establishment. During these war times everybody wants to see a daily paper, and the newsboys are pushing them everywhere—that is, when they are allowed. We have forbidden the delivery of papers to our people while at work. I speak of this because I know how strong the temptation is to take "just a minute or two;" and if *one* does it, another will. We have also been obliged to forbid peddlers, book agents, and agents for every thing else, coming on to our premises. Now, if these agents were conscientious and honest, we might, perhaps, permit them to come in before or after working hours; but I have learned by sad experience that it is not best to do even this. Do you say we make a fuss about little things? My friend, this fuss is made for your own good. The person who keeps his mind and his hands busy on the work he is *employed* to do right along through the working hours may be worth 25 cts. an hour or more; but if he is stopping his work to notice every thing that is going on, to go over to his neighboring workmen to talk about things not pertaining to the business, he will be worth to his employer only 15 or 20 cts. an hour, or even less. Why, I have had men (and women too) in my employ who finally became so demoralized in this very way that I made up my mind that they hindered business more than they helped, and that we should get along better if we paid them their wages to have them stay at home and not come near us, and they *had* to stay at home finally without any wages at all. One reason why we have had such extreme cases is because we all dislike to make a fuss about things that look on the face of them to be small and unimportant and so we good-naturedly let the things pass until there has to be a sudden reform.

I want to say a word more about doing work for yourself when you have hired out to somebody else. If I wanted to get good pay in any establishment I would be very careful about small matters. If I wanted to write a letter in regard to my own affairs while in the employ of somebody else, I would speak to my employer about it, and take out the time it occupied, even if it did not take me more than five minutes. You may say this is a small matter; but small matters help to make up solid character. The man who is known to be scrupulously honest in details will very soon get to be trusted, and will get large pay accordingly. I can often measure a man's worth the first day he works. A boy may be excused for running to the clock every little while to see what time it is; but a grown-up man should be ashamed to do things of this kind. There are people who are constantly hunting up pretexts and excuses to leave their work and to go off after something. I have had men who always wanted a different tool from the one I gave them, and who would spend more time in going after a tool they pretended they wanted than it would have taken to finish the work with the tool they had.

In regard to the old adage, "A new broom sweeps clean," this ought to be exactly the other way when applied to reasonable beings. The man who has had charge of a certain line of business for several years has learned many crooks and turns. He has learned by long experience, and sometimes by *sad* experience, how to avoid mishaps. There are many departments where it really takes years to become proficient in all the details. The old hand at the business should be worth two or three times as much as a new hand. Now, this is all true; but it is too often the case that, instead of trying to keep up with the times, and improve still more in his vocation, he gets to shirking, and finally to cheating; and then the adage becomes true. The old broom must be replaced by a new one, not because the new one is any better, but because the old one absolutely will *not* do that which he knows very well how to do.

During the dull season of the year we have always been more or less annoyed by gossip during working hours. Now, this habit of gossiping with a fellow-workman is one of the diseases that I have learned to fear is incurable. One who is addicted to it will certainly get very small pay. Another thing, these sins always grow upon us. A person who succeeds in taking a few pennies out of the money-drawer without being discovered, will, in a few days, take more; and you all know where it ends. Our text tells it exactly. Now, the person who begins to work at something belonging to himself while his employer is away is exactly like the one who puts his hand into the money-drawer. His sin will grow upon him unless his employer's reproof (or the influence of the Holy Spirit) stops him in his career. The man who takes money out of the drawer is called a *thief*; but the man who takes a few minutes several times a day, and succeeds in skillfully concealing the fact from his employer, will keep on taking more and more. Yet such a person would blush to be called a thief. But what is the difference? If you are receiving 30 cents an hour for your work, and you succeed in getting in ten minutes for yourself without being discovered, you have taken a nickel from your employer. And what is the difference whether it be taken that way or from the money-drawer? You may suggest that we are oversuspicious; that a good many take out the time, or work at some other time enough to make it up. This is true. Before condemning a person he is generally watched for quite a period of time; and he is almost always greatly astonished to know that anybody has been watching him. Let me make a suggestion: If you take a little of your employer's time, and afterward work enough or more to make it up, be careful to speak of it to your employer, or, if in a large establishment, to the time-clerk, for he is very likely to be questioned in regard to this matter; and it will be worth a great deal to *you* for him to be able to say, "That is all right. This person spoke to me about it at the time." The Bible exhorts us to "shun even the appearance of evil," and good business common sense

should teach us the same thing. Let all your acts be such that they will at any time bear investigation without embarrassment or quibbling.

I have said some pretty severe things in regard to humanity, and it has pained me to say them. Now let me say this: There are many boys and girls in my employ who are as honest as the day is long. Sometimes things have come up that seemed to reflect on these—I almost wanted to say "my jewels." Well, they *are* jewels indeed; and when anybody hints at any thing that is crooked or dishonest, or that even looks bad, you do not know how it rejoices my heart to say, "Why, that boy is as honest as the day is long. I will guarantee that, whatever the grievance is, if you will let me take hold of it I will bring out the facts showing that he is clear and straight as the light of day." Sometimes I can add, "He is in my Sunday-school class, and I know him through and through." Oh how I do delight to get hold of such boys! I rejoice to take them by the hand, and look them square in the eye. Whenever an opportunity occurs I like to introduce them to my friends, and speak an encouraging word in regard to them. As a general thing, such boys and girls are Christians. They belong to the Sunday-school, and, of late, generally to the Endeavor Society also, or some similar organization among the young people. I often predict that such boys and girls will fill high places of honor in time to come; and it delights my heart to say in after years, when I hear that some one of them is a college professor, or has gone to the missionary field, or is filling some other important post, "There, I told you so!"

Now, dear friends, whoever you may be, please believe I am right when I tell you that no one thing can contribute more toward getting better pay, no matter for whom you are working, than to keep in mind this little text—"Be sure your sin will find you out." And when old age comes on, and grim death calls, besides the better pay here in this world you will find eternal life beyond, amid the companionship for ever and ever of the good, the honest, and the pure in heart.



ROBBING SICK PEOPLE; MEDICINES TO BE GIVEN FREE OF CHARGE.

In my work of investigation in regard to medicines free, now so universally advertised through nearly all of our home papers, I have met with a very unexpected aid, through the columns of that grand home paper the *Rural New-Yorker*, in its issue of July 9. The *Rural* was describing the Craig colony at Sonyea, N. Y., for the benefit of epileptic patients. Permit me to say that it rejoiced my heart to know that there is such an institution

in this country, recognizing the great need of an asylum specially for those unfortunate people. Let me give you a clipping from the middle of the article:

The average number of inmates in the colony was 214. The treatment given them, while always under medical supervision, is moral and hygienic rather than medical. Fresh air and exercise, cheerful surroundings and careful diet, are the chief factors in the treatment given. Many of the patients, upon entering the colony, are found to be suffering from bromism, a condition resulting from continued and excessive use of bromide of potassium. The effect of this is pitiable, causing not only physical weakness, but also mental dullness that seems akin to idiocy. The bromide suppresses the fits, while destroying health of body and mind. No doubt the advertising quacks who assert that they cure fits resort to such means to support their claims. Of course the bromides are withdrawn at the colony, and the whole-some life substituted effects a wonderful change.

The above statement interested me, more especially because GLEANINGS, some six or seven three years ago, recommended bromide of potassium as a remedy for insomnia. Since then there have been several protests against advising people to depend on a drug to induce sleep. A few years ago a young man was employed in our establishment, who was afflicted with epilepsy. I had many talks with him in regard to the matter. Several times he got hold of a medicine that he was sure was going to cure him. At one time, through the aid of this treatment, he went as long as six weeks, if I am correct, without one of his "spells." The medicine was furnished by an institution in a neighboring city that I pronounced quacks from the way their circulars read. Of course, he paid them a good deal of his hard-earned money; and although the remedy did suppress for a time his peculiar trouble, his friends as well as myself began to fear that the powerful drug was doing him injury in other ways. It seems that the advertisers have the names of all epileptics, for he showed me the circulars he got from time to time, making great claims, and calling everybody quacks but themselves. Poor Albert! When off alone one day fishing in the river he was taken suddenly, and rolled off the bank into deep water, with no one near to help. Well, this State institution described by the *Rural* informs us of an alarming state of affairs as described in the clipping above. These vendors of medicine, who doubtless furnish it at first free of charge, probably know what the result will be—"mental dullness that seems akin to idiocy." But yet in the face of this they push ahead. Little do they care whether they kill or cure.

Now, is it not time that our different States, or, better still, the United States as a whole, shut down on this business? By the way, I am going to send a copy of this to Commissioner Blackburn, just as soon as the printers get a proof. I would advise every reader of this, who has friends or relatives afflicted with epilepsy, to send for the *Rural* giving an account of the treatment. This treatment is what I have been so vehemently advocating for years past—*doctoring without medicine*. They attribute their success to the right sort of diet, lots of fresh air—in fact, outdoor life as much as possible, keeping the patients

pleasantly employed where they will be safe from injury, and taking advantage of all rational means known to medical science at the present day for the alleviation and cure of human suffering. May God bless those who have the institution in charge.

ROBBING SICK PEOPLE—CHAPTER 2.

Somebody is sending me a paper called the *Christian*, published in Little Rock, Ark. Here is a sample of one of the editorials:

It isn't anybody's business; but as I am not a hypocrite, and never do anything in secret, I will say that I get drunk when I feel like it: always pay for my drinks, and never think of going in at the back door.

I thank God for whisky. It has been my true and faithful friend for twenty years.

After looking over several numbers of the paper, my impression is that the principal part of the editorials are written when the editor is drunk. Now, there is nothing particularly worthy of notice or comment in this; in fact, I should not have given the periodical a notice had it not been that this fellow is actually getting money for pretending to cure people who are sick. I think he must do it something on the principle of Christian Science. Just notice his audacity in the following:

My terms for healing, which means the speaking of the Silent Word every day, are just the same as ever: from one to ten dollars a month, leaving each one to judge as to his own financial ability. Just as faithful treatments are given for one dollar as are given for ten dollars.

You'd just as well send me the money, for I'm going to have it. My *thought* has gone out, and will not return unto me empty. Besides, this money is mine.

People do send money to such fellows, or else they would not have the wherewithal to publish their papers; neither would they keep advertising unless somebody sent them money. A great part of the publication is filled with testimonials from people who claim to have been cured, but these testimonials have neither name nor address. I hope the sample I have given you above will be sufficient to discourage anybody who is thinking of sending away hard-earned money to get somebody to *pray* for him.

DO OUR SOLDIERS NEED BEER?

The brewers have been very busy, and their sympathies have been very strong to the effect that our soldiers, especially in tropical climates, ought to be supplied with beer to fortify them against contagious diseases. Gen. Miles, however, it seems, does not agree. See the following, which we clip from a recent number of the Chicago *Advance*:

Gen. Miles, in an order to the army concerning matters of health, says: "The history of other armies has demonstrated that, in a hot climate, abstinence from the use of intoxicating drinks is essential to continued health and efficiency." If this is true the liquor-cafeteria ought to be summarily abolished. Let Gen. Miles secure this "essential" by peremptory orders.

It seems to me, friends, that, if America is going to have more to do than she ever did before with the affairs of the whole wide world, it is of the utmost importance that we set a good example before the rest of the world. If it has been settled for all time to

come that intoxicants have no place on board of a man-of-war, why not let the same ruling be carried out on the land as well? It seems that, if any man in the world ought not to be allowed to get hold of a "gun" under any circumstances, it is the one who handles intoxicants. It rejoices my heart to see the stand that our dailies are taking for temperance; and if the rest of the world would follow them we could soon shout, with the Anti-saloon League, all the world round, "The saloon must go."



By the help of the barometer and Weather Bureau our wheat was got into the barn without getting a particle of wet on it; but the barn was literally crammed full. After the wheat was drawn in we went over the stubble with a mowing-machine, then raked it up with a horse-rake, and had six pretty good-sized loads of loose straw and wheat together. When the thrashing-machine got around to go to work, the barometer indicated rain. We got help from the factory to come out and push things; and by working late at night, and commencing very early in the morning, we just managed to get every thing cleaned up in good condition, and the machinery sent away just before a season of heavy thunder-showers. I tell you, the saving on that wheat crop alone has paid for a good many barometers. As we have not measured the ground the wheat grew on, we can not give the precise amount of wheat per acre; but it is somewhere between 25 and 30 bushels. But the quantity of straw was immense. There were 217 bushels of wheat, and one of the largest strawstacks I ever saw—that is, for a small farmer. As straw commands a very small price at present, and but little demand, I shall have plenty to give my strawberries such a mulching that I won't need to have muddy berries next year. Our thrashing-machine was one of the best up-to-date rigs, and there was but little wheat in the straw to bother in the way of weeds. And, by the way, I have long been wanting to try raising some extra nice seed potatoes under straw; so you see now is my chance.

We finished thrashing Saturday afternoon. The boys and men were pretty tired, and they went home a little early. But just as the last one had got out of sight Huber informed me that the

BLISTER POTATO-BUGS

were just getting on the Bovee potatoes in droves. I told him to wait till I could see if I could find a boy over at the factory who had not gone home. They were all gone. By the time I got back to where I left Huber he was gone too. He did not hear my last remarks, and had gone down to the river to take a bath, a mile or two away. I went out among the Bovee potatoes. There they were, hill after

hill, just like broom-splints. It seemed incredible, for we had been around there certainly not much more than 24 hours before, and the potatoes were all right. When I saw them there was not a bug in sight, and, for that matter, there was hardly a leaf on the potatoes. I looked all around, but I could not see a bug; but there was a wide swath of clean potato-tops spreading off toward the southeast. The rascals were moving in an almost straight line. I followed along, feeling sure I should catch up with them. It was about six o'clock Saturday afternoon of an exceedingly busy week, and the help had all gone home. If that army of bugs was to be routed before Sunday it looked as if I should have to do it. I gave each hill a kick with my foot, not hard enough to hurt the potatoes, but hard enough to dislodge the bugs. Now, my feet are not very large, but they are very nimble when I am deeply interested, Peter Henderson once delivered an address on "gardening with the feet." Well, for about two hours I did some of the tallest gardening with my feet that I ever did in my life. The ground was so mellow that stamping on the bugs did not hurt them very much; but I noticed that, if I gave my toe a twist so as to grind them into the soil, they were pretty much disabled; and I kept stepping on them and giving them a twist with one foot, and then with the other. Pretty soon I began to get warm, and off went my coat and vest. As it was cloudy after the rain, I pretty soon discarded my hat also. It occurred to me once or twice that the neighbors might think I had gone crazy to see me dancing a hornpipe, or something like it, as I waltzed through the potato-vines. Well, I kept on till I got tired out. But there were more bugs ahead, and I could not afford to stop. Pretty soon I was agreeably surprised to find I was getting a "second wind," just as I do when riding a wheel. By the way, friends, I think one might get a second wind in almost any thing if his sympathies are sufficiently enlisted.

By the time it began to grow dark I had gone over every hill infested with bugs. Of course, a good many of them escaped me, and congregated on neighboring plants. You know I am talking about the old-fashioned potato-bugs, and not the Colorado beetle. We always call them "blister beetles" for short. I had been "acquainted" with them for over forty years, and knew pretty well how they operate. I expected the live ones that were left, and perhaps some of the cripples, would by morning be gathered in a cluster something like a swarm of bees. I once saw a lot of them on the corner of a corncrib, forming a cluster almost as large as a swarm of bees. They were destroyed by burning straw before a bug could take wing. Huber uses, in his electric work, a gasoline soldering-apparatus that will throw a powerful blaze a foot or more in any direction, up or down. By the time I had finished my "hornpipe in the potato-patch" Huber had got back from his swimming, and he got me his torch and showed me how to use it.

Next morning I was up at four o'clock, but

the bugs had not clustered. They were evidently hungry, for they had cleaned off the foliage from quite a number of hills of potatoes that were untouched the night before. I stamped them some again, even if it was Sunday; but the rain soon put a stop to my work. I managed to kill a good many of them, however, by crushing them into the soft dirt; and we had such a heavy rain during the day that I hope they are there yet.

While I was at church a neighbor called to say that the bugs were just ruining my potatoes up in the swamp. I was agreeably surprised, however, when I got up there, to find they had stripped the tops in only one corner of the patch, and they were New Queens, almost ripe, so it did not matter very much. Now, after stripping that one corner, every bug had left, leaving about half an acre untouched. Right from the swamp garden they went, evidently over to my Bovees, fully forty rods distant. In going there they went in an almost straight line southeast; and when they struck the Bovees they marched right through them toward the southeast. When I stamped them into the dirt I commenced on the east side so as to chase them over out of the potato-patch. Why should these bugs persist in going in a certain direction? If I am correct, after they had got out of the patch they went away from the field, pushing ahead in their course, even though the greater part of the field they left was untouched. I wish our experiment stations would tell us more about these queer insects. But, oh my! don't they strip a potato-patch quick when there are enough of them to work to advantage? I have never succeeded in poisoning them with Paris green or any thing else; and this time I did not try any remedy except grinding them into the ground. I think they are especially bad this season, as I have heard of them several times in this vicinity. Can anybody tell a better way to manage them than the one I have named? When I was a boy folks used to drive them out of the patch with a bundle of whips, and I have known them to be made to fly away. But all that we have don't seem to fly "worth a cent."

MORE ABOUT THE BLISTER-BEETLES.

Later.—After we had conquered the bugs on the Bovees I made a tour of inspection all over our different patches. Down in the creek bottom, among my extra earlies, I found more bugs to the square inch than I ever before saw or heard of. When we disturbed them on a hill of potatoes the whole ground was literally a moving, living mass. I began to study up some quicker way—a way that would not take so much human muscle. A man was cultivating potatoes near by. We got an old phosphate-sack, and filled it half full of soil. Then we hitched the horse to the bag of dirt and dragged it between the rows. The soil was just right after the rain to pulverize, so that the bag made a clean smooth furrow with sides so steep and loose with the soft dirt, that the bugs, when they once got into the furrow, could not crawl out. They would just roll over and over, then when we drove them off from the hills they

were down between the furrows rolling over each other on account of the loose dirt on the sides. The bag of dirt was not heavy enough to pulverize them sufficiently, so the driver stood on it. It made old Mike grunt some to pull it, but it demolished the bugs by the thousands. As the potatoes were almost ripe the bugs did not do much harm; and, in fact, I should not have cared so much about the bugs, only I did not want them to get over to a neighboring patch where some choice late potatoes were just coming up. We made the horse go up and down in the furrows as far as the bugs were working until I had made almost a clean job of it. Now, I want you to give me credit for having invented that bag of dirt. I thought of a log of wood, a saptrough filled with stones, and some sort of cultivator to bury them deep; but I think the bag "takes the cake."

EARLY POTATOES.

Not only the bugs but the blight has struck the most of them. The first to go were the Red and White Bliss Triumph. And this corroborates what our Ohio Experiment Station said about the Triumphs being more susceptible to blight than other kinds. The Triumphs were affected first, and now nearly all of a dozen kinds have blackened foliage with the black shriveled leaves beaten off by the rain until one is puzzled sometimes to know whether it is blight or bugs that have stripped the branches. What potato, do you suppose, stands blight better than any others? Why, it is our old friend the New Queen. Vaughn's Extra Early comes next. The New Queen seems as bright and fresh as potatoes just coming up; but perhaps this is somewhat because it is rather later than the extra earlies. The potatoes are, however, almost as good-sized as any of them, unless it is the Bovee, which certainly has produced larger tubers up to the present time than any of the extra earlies. In fact, it has given us a very good yield already; but the vines are still growing as well as they can, with blight and bugs both to hinder.

THAT BIG POTATO THAT WAS PLANTED IN THE GREENHOUSE.

I do not think I shall succeed in getting 100 bushels from one potato in one year, as I talked about last October, for I made a balk of it to begin with. The soil in our greenhouse across the way has been there ever since the greenhouse was started, five or six years ago. We have added more old well-rotted stable manure every winter, but the beds have never been cleaned out and the contents renewed, even if old greenhouse men did tell me I would have trouble. You see, the soil over there is never frozen as outdoor ground is, and the result seems to be, for greenhouse work, that it gets full of fungus or something of that sort. We had a little trouble last winter. This winter we had one particular bed where neither lettuce, tomatoes, nor potatoes would grow at all. It was rich and in good order; watered by sub-irrigation; but strong thrifty plants, set out with the utmost care, would die right down. The seeds would

sometimes start a little but soon die. Before winter we expect to clean out all the beds, and put in new soil. Well, my big potato was cut up into 48 or 50 pieces, and planted in this ground. I managed to secure half a peck of potatoes from the one planted, but they are mostly quite small. Then we had another trouble in getting them to sprout as potatoes do that are wintered in the cellar. They may start later on, as there is time yet to get a crop; but I do not think I shall get quite 100 bushels from one potato in one year.

FRUIT-TREE BORERS.

Of late there seems to be unusual interest in the matter; and, judging from our own orchard of a hundred or more trees, I think there *ought* to be. Three or four years ago I was wondering why so many of our fruit-trees seemed to be dying when they had good rich ground, cultivation, etc., but was greatly alarmed when I found there were from one to a dozen borers around the roots of almost every tree. Some of the trees were girdled, and there were holes made so that a slender wire could be pushed in, even beyond the heart of the tree. We dug them out, and have kept them out by hand work since then, using a slender wire and a sharp-pointed pen-knife. Others have had a like experience. Well, within the past year, and perhaps I might say within the past few months, there have been a great number of paints and washes recommended as sure death to the borers. Our experiment stations, however, have come in very opportunely, and warned us that many of these patent-right preparations are not only sure death to the borers, but sure death to the trees also. A wonderfully enticing circular came to hand a few days ago, urging everybody to act as agent for a new kind of tree-paint. I forwarded this to our good friends of the *Rural New-Yorker*, who have promptly exposed so many fakes along this line, and below is their reply:

Mr. A. J. Root—I am sorry that I can not tell you any thing definite about the inclosed circular. I only know that so many of these so-called tree paints have been put on the market that I must say we fight very shy of them. Our best entomologists are very doubtful as to the real value of any such paint. When dendrolene was introduced last year we all thought we had a very good thing; but it killed so many young trees that now no one thinks of using it at all; but we are promptly receiving recipes of home-made tree-paints or mixtures, and they have been used by our readers with good results, and probably one of the best is the inclosed. I think it likely that this home-made mixture will give you about as good results as any of the so-called tree-paints which are advertised for sale; and, for my part, I would not use any of the latter until advised to do so by our State entomologist.

New York, July 21. H. W. COLLINGWOOD.

Managing Editor.

The following is the recipe alluded to by Mr. Collingwood :

A PAINT FOR PEACH-TREES.

I have for several years past used the following wash: Slake lime to the consistency of good mixed paint, and, to each paiful of about two gallons, add one quart of raw linseed oil, which will thoroughly mix by a few minutes' stirring. With this, paint the trees where there is danger of borers entering. For applying I use a painters' round dust-brush. I generally apply the paint about June 1, and it will remain a perfect coating until heavy rains in October or November. I always examine the trees for borers before applying; but in 1896 less than half a dozen borers

were found, and they had done no harm. In 1897 only two borers were found, and they had not done any harm. My orchard contains nearly 500 peach-trees. I formerly used washes made with soap, ashes, potash, etc., but the trouble was they would not adhere long enough to protect through the season. This wash will, and will wash off during winter, leaving the bark smooth.

The name of the writer is not given in the above; but I presume the same preparation will be all right for apple and other trees as well as for peach. I feel so certain this paint can not do any harm to the trees that I think our friends may all apply it at once, without fear; and it probably is just as cheap as or a great deal cheaper than the patent-medicine preparations that you have got to send away off for.

EVERBEARING STRAWBERRIES.

Quite a number of these have been brought forward, but none of them have proved to be much of a success—that is, in the Eastern States. But when we say this we must bear in mind that strawberries are grown in the East in the fall, and put on the markets and sold at good prices; but so far they seem to be from well-known sorts, and the fall crop seems to be the result of conditions rather than varieties. The Jessie, where it grows with thrift and vigor, will frequently bear quite a lot of nice fruit in the fall from new runners that started early. Last season the Louis Gautier was advertised quite extensively as a second-crop berry. We did not succeed, however, in getting any last season, but I rather think now it was owing to faulty management. At present writing, July 25, I am happy to say that our young plants of the Louis Gautier are budding and blossoming quite freely, and we have quite a few green berries of fair size. But it is still a question of rain or irrigation. I am rejoiced to say that the plant certainly has a remarkable tendency to put out blossoms and fruit as soon as the new plants are sufficiently established.

APPLYING MANURE WHERE YOU WANT TO GROW THRIFTY PLANTS.

On that plat worked on the hill system I have said so much about, we applied at one side some old well-rotted manure quite liberally. This was done, I think, some time in May. It had the effect of making larger and nicer fruit, as I expected it would, and now it shows such a marked improvement in the way of getting strong thrifty plants that we are hauling more manure and depositing it along close to the berries on the up-hill side. We place it thus, because, if there should be a heavy rain, the strength of the manure is washed down on the strawberries and on the land. For this purpose you want old black well-composted manure. This is not so apt to contain weed-seeds, and it seems to hit the right spot the very first rain that comes. At first you may think the bed looks very unsightly; that those great heavy clods will never get worked down. But just keep working them up with a hoe after a heavy rain, and you can soon have your bed nice and smooth again. And then what fun it is to see the great strong green leaves, when, with-

out the manure, your bed would look dry and shriveled up! The demand for plants is really spoiling my plan of growing strawberries in hills—that is, so far as cutting off all runners is concerned. Sending off all plants promptly the very day the order is received, and at the same time sending good strong ones, is about the best way of advertising strawberry-plants I ever heard of, especially if you are able to supply good strong thrifty plants all through the months of July and August. If your plot for plant-raising is near the road where people can see them as they go by, you can build up quite a local trade. But to do it right takes lots of work and lots of manure.

IF YOU WANT BEES

that will just "roll" in the honey, and that are wonderful red-clover workers, also gentle to handle and exceedingly hardy, then try **MOORE'S STRAIN OF ITALIANS**, the result of 19 years of careful breeding. Warranted queens, 75 cts. each; 3 for \$2.00; per dozen, \$7.00; select warranted, \$1.00; tested, \$1.00; select tested, \$1.50; strong 3-frame nucleus, with select tested breeder, \$3.00; same with select warranted queen, \$2.50. Safe arrival and satisfaction guaranteed. Those who have never dealt with me I refer to A. I. Root, who has purchased of me over 900 queens. See what my customers have to say in my new circular, which is free for the asking.

J. P. MOORE, Morgan, Pendleton Co., Ky.

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grown on the bank of Lake Erie, two miles from any peach orchards and guaranteed free from Scale, Borers, Yellows, etc. Large stock of Pear, Plum, Cherry, Quince and immense supply of Small Fruit plants. Headquarters for Ornamental Trees and Shrubs. A quarter of a million of low down budded roses.

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THE STORRS & HARRISON CO.,

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For the next 90 days, we will sell warrant ed purely mated Italian queens at 50 cts. each; $\frac{1}{2}$ doz., \$2.50; tested, 60 cts. each; $\frac{1}{2}$ doz., \$3.00. Safe arrival guaranteed. 15 years' experience in queen-rearing.

LEININGER BROS., Fort Jennings, Ohio.

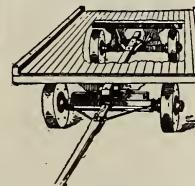
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QUEENS.

Untested, 70 cents; 3 for \$2.00; after July 1st, 50 cents each. Tested queens, \$1.00 each. Best Italian stock. Satisfaction guaranteed by return mail.

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originated with us, and we still sell direct to farmers three-fourths of all that are used. We build ten styles of farm wagons, extra wheels for old wagons and milk-peddler's wagons. Steel-wheel trucks, \$18.

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Large Illus. Catalogue Free. **CASH BUYERS' UNION, 162 W. VanBuren Street, B-345, Chicago, Ills.**

Dollar Eggs?

Yes, after June 1st we will sell all eggs at half price, \$1.00 per 15. Our breeds are: *Barred, White, & Buff Plymouth Rocks, Light Brahmans, Langshans, White Wyandottes, Br. Leghorns, Pekin Ducks.* Eggs will be from same stock, and handled with same care given early orders at full prices.

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Send for our book, "Everything for the Poultry Yard," (14th annual edition); eighty 6x9 pages; finely illustrated; full of information; you want it; it's free. Address

Geo. J. Nissly, Saline, Mich.

Established 15 years.

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SIX-INCH FOUNDATION-MILL IN CANADA.

We have for sale at St. Thomas, Ont., a six-inch thin-super-foundation-mill which we offer, freight and duty paid, f. o. b., at that point, for \$20.00. It will make nice foundation 10 to 11 feet to the pound. It was sent by mistake for an extra-thin machine. Another had to be sent, hence we have this one to dispose of. Will mail sample to any one interested, if desired.

HONEY, COMB AND EXTRACTED.

We should be pleased to hear from those whose honey crop has not been sufficient to supply the home demand. We are in position to furnish you with a choice article of comb or extracted at reasonable rates. Have already received a shipment of fancy comb in plain sections, and have other lots of honey on the way, both comb and extracted. Prices sent on application. Don't overlook our honey-leaflet as a means of working up a demand for honey. They pay well.

HONEY PROSPECTS.

About the time our last issue went to press, offers of honey began to come in, and they have been coming quite freely since. These offers and reports have been coming from different sections of the country; and, judging from these reports, we still believe that, unless there is a large fall flow, there will be considerably less honey to put upon the market this year than last, although the prospect for a crop in many localities is much better than it was. In some quite large areas the crop will be much better than it was last year in the same places, while in other areas, much larger, the yield is away behind last year, or wanting entirely. The large yields this year are several degrees farther north than the best yields of last season, so that the northern New England States, Northern Michigan, Wisconsin, and Minnesota are, as a whole, much better off this year than last, while through Ohio, Indiana, Illinois, and Missouri the honey yield, so far as reported, is very small compared with last season.

Special Notices by A. I. Root.

SEEDS OF THE PAPAYA (OR MELON) TREE.

Thanks to our Bermuda friends, we have now a good supply of seeds of this tropical plant, and we are still ready to send a few of them to any one who wants to try them, on receipt of a prepaid directed envelope. Please remember this is a tropical tree, and would have to be treated as you would treat an oleander, lemon, or orange tree. It is, however, of very rapid growth, and ought to grow several feet in a single season. I would suggest that the care and culture should be about the same as for the tomato. You all know how to grow tomatoes. Protect your papayas from the frost just as you would the tomato-plant, and you are all right.

STRAWBERRY-PLANTS READY TO SEND OUT DURING AUGUST.

Jessie, Rio, Sharpless, Warfield, Bubach, and Haverland, all old standard varieties, will be furnished for 15 cts. for 10, or 75 cts. per 100. If wanted by mail, add 5 cts. for 10 or 25 cts. for 100, for postage. The first three are perfect, the last three imperfect. Of the newer varieties we can furnish Marshall, Brandywine, and Wm. Belt at 20 cts. for 10 or \$1.50 per 100. Any of the above potted in jadou, at double above prices. Darling, Carrie, Earliest, and Margaret, will be furnished potted in jadou fiber (postage paid), at 10 cts. each or 85 cts. for 10. Owing to the demand for the Nick Ohmer we can make no better figure than before—25 cts. each or \$2.00 for 10. We have reduced the price on the Darling because neither that nor the Earliest has proved to be productive in two seasons' trial. As they are both perfect they will be just the thing for fertilizing varieties of the imperfect kinds. By the way, I wish those who received premium plants last fall, of Darling and Earliest, would send us postal card reports in regard to their productive-

ness. They are among the earliest varieties known, but they are small, and few in number. The Rio is not so early, but with us it is much ahead of these two in both respects.

CONVENTION NOTICE.

The annual meeting of the Northern Illinois Bee-keepers' Association will be held at the court-house in Freeport, Ill., on Tuesday and Wednesday, August 16 and 17, 1898. All interested in bees are invited to attend.

B. KENNEDY, Sec.,
New Milford, Ill.

I. J. STRINGHAM,

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**Warranted Italian Queens, 65 cents; 3 for \$1.60;
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